

Question 3 Correct Mark 1.00 out of 1.00
If A is an $n \times n$ -symmetric matrix, then A^2 is symmetric. Select one: \bigcirc a. True \checkmark \bigcirc b. False
The correct answer is: True
Question 4 Correct Mark 1.00 out of 1.00
Let A be a 4 \times 4 matrix. If the homogeneous system $Ax = 0$ has only the trivial solution then
Select one: () a. A is singular () b. A is nonsingular () c. $det(A) = 1$ () d. $A = 0$
The correct answer is: A is nonsingular
Question 5 Correct Mark 1.00 out of 1.00
If <i>E</i> is an elementary matrix of type III, then E^T is

- $\bigcirc\,$ a. an elementary matrix of type I
- \bigcirc b. an elementary matrix of type III 🗸
- $\bigcirc\,$ c. not an elementary matrix
- \bigcirc d. an elementary matrix of type II

The correct answer is: an elementary matrix of type III

Question 6 Correct Mark 1.00 out of 1.00
If <i>A</i> is a singular matrix, then <i>A</i> can be written as a product of elementary matrices. Select one: ○ a. False ✓ ○ b. True
The correct answer is: False
Question 7 Correct Mark 1.00 out of 1.00
If <i>A</i> , <i>B</i> , <i>C</i> are $n \times n$ nonsingular matrices, then $A^2 - B^2 = (A + B)(A - B)$. Select one: \bigcirc a. True \bigcirc b. False \checkmark
The correct answer is: False
Question 8 Correct Mark 1.00 out of 1.00
If <i>E</i> is an elementary matrix then one of the following statements is not true Select one: \bigcirc a. E^{-1} is an elementary matrix. \bigcirc b. E^{T} is an elementary matrix. \bigcirc c. <i>E</i> is nonsingular. \bigcirc d. $E + E^{T}$ is an elementary matrix. \checkmark

The correct answer is: $E + E^T$ is an elementary matrix.

Correct

Mark 1.00 out of 1.00 If x_0 is a solution of the nonhomogeneous system Ax = b and x_1 is a solution of the homogeneous system Ax = 0. Then $x_1 + x_0$ is a solution of Select one: \bigcirc a. the system Ax = 2b \bigcirc b. the system Ax = 0 \bigcirc c. the system Ax = b \checkmark \bigcirc d. the system Ax = AbThe correct answer is: the system Ax = bQuestion 10 Correct Mark 1.00 out of 1.00 If A, B are two square nonzero matrices and AB = 0 then both A and B are singular Select one: 🔘 a. False 🔘 b. True 🗸 The correct answer is: True Question 11 Correct Mark 1.00 out of 1.00 If $(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 0 & 3 & 2 & | & 1 \end{pmatrix}$ is the augmented matrix of the system Ax = b then the system has no solution Select one: 🔘 a. False 🔘 b. True 🗸 The correct answer is: True

Question 12		
Correct		
Mark 1.00 out of 1.00		
If A, B are $n \times n$ -skew-symmetric matrix	trices(A is skew symmetric if $A^T = -A$), then $AB + BA$ is symmetric	
Select one:		
Select one. ○ a. True ✓		
○ b. False		
The correct answer is: True		
Question 13		
Correct		
Mark 1.00 out of 1.00		
	1 0 -2 -1 -2	
If the row echelon form of $(A b)$ is	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	by
If the row echelon form of $(A b)$ is Select one:	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	by
Select one:	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	by
Select one:) 1 1 -1 -1) 0 1 1 0) $\left(\begin{array}{ccc} 1 & -1 \\ 0 & 1 \end{array} \right)$ then the general form of the solutions is given	by
Select one:) 1 1 -1 -1) 0 1 1 0) $\left(\begin{array}{ccc} -1 \\ 0 \end{array} \right)$ then the general form of the solutions is given	by
) 1 1 -1 -1) 0 1 1 0) $\left(\begin{array}{ccc} -1 \\ 0 \end{array} \right)$ then the general form of the solutions is given	by
Select one: $ \bigcirc \text{ a. } x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix} $) 1 1 -1 -1) 0 1 1 0) $(0 + 1 + 1)$ then the general form of the solutions is given	by
Select one: $ \bigcirc \text{ a. } x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix} $) 1 1 -1 -1) 0 1 1 0) $\left(\begin{array}{c c} -1 \\ 0 \end{array} \right)$ then the general form of the solutions is given	by
Select one: $ \bigcirc \text{ a. } x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix} $) 1 1 -1 -1) 0 1 1 0) then the general form of the solutions is given () 0 1 1 0	by
Select one: $ \bigcirc \text{ a. } x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix} $) 1 1 $-1 \mid -1$) 0 1 1 $\mid 0$ then the general form of the solutions is given $\left(\begin{array}{c} 0 \\ 0 \end{array} \right)$	by
Select one:) 1 1 $-1 -1 $) 0 1 1 0 then the general form of the solutions is given by $0 - 1 - 1 0 = 0$	by
Select one:) 1 1 -1 -1) 0 1 1 0 then the general form of the solutions is given $\left(\begin{array}{c} 0 \\ 0 \end{array} \right)$	by
Select one:) 1 1 -1 -1) 0 1 1 0 then the general form of the solutions is given $\left(\begin{array}{c} 0 \\ 0 \end{array} \right)$	by
Select one: $a. x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$ $b. x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$ $c. x = \begin{pmatrix} -2 - \alpha \\ \alpha \\ \alpha \\ \alpha \end{pmatrix}$) 1 1 -1 -1) 0 1 1 0 then the general form of the solutions is given $\left(\begin{array}{c} 0 \\ 0 \end{array} \right)$	by
Select one: $a. x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$ $b. x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$ $c. x = \begin{pmatrix} -2 - \alpha \\ \alpha \\ \alpha \\ \alpha \end{pmatrix}$) 1 1 -1 -1) 0 1 1 0 then the general form of the solutions is given $\left(\begin{array}{c} 0 \\ 0 \end{array} \right)$	by
Select one: $a. x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$ $b. x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$ $c. x = \begin{pmatrix} -2 - \alpha \\ \alpha \\ \alpha \\ \alpha \end{pmatrix}$) 1 1 -1 -1) 0 1 1 0 then the general form of the solutions is given $\left(\begin{array}{c} 0 \\ 0 \end{array} \right)$	by
Select one:) 1 1 -1 -1) 0 1 1 0 then the general form of the solutions is given $\left(\begin{array}{c} 0 \\ 0 \end{array} \right)$	by

The correct answer is: $x =$	$\begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \end{pmatrix}$
	(α)

Question 14 Correct Mark 1.00 out of 1.00
If a matrix <i>B</i> is obtained from <i>A</i> by multiplying a row of <i>A</i> by a real number <i>c</i> , then $ A = c B $. Select one: \bigcirc a. False \checkmark \bigcirc b. True
The correct answer is: False
Question 15 Correct Mark 1.00 out of 1.00
If <i>A</i> is a nonsingular 3 × 3-matrix, then the reduced row echelon form of <i>A</i> has no row of zeros. Select one: ○ a. True ✔ ○ b. False
The correct answer is: True
Question 16 Correct Mark 1.00 out of 1.00
If <i>A</i> is a 4 × 3 matrix such that $Ax = 0$ has only the zero solution, and $b = \begin{pmatrix} 1 \\ 3 \\ 2 \\ 0 \end{pmatrix}$, then the system $Ax = b$
Select one: a. has exactly one solution b. is either inconsistent or has an infinite number of solutions c. is either inconsistent or has one solution ✓ d. is inconsistent
The correct answer is: is either inconsistent or has one solution

Question **17** Correct Mark 1.00 out of 1.00

Let U be an $n\times n\text{-matrix}$ in reduced row echelon form and $U\neq I,$ then

Select one:

 \bigcirc a. det(U) = 1

- \bigcirc b. U is the zero matrix
- \bigcirc c. The system Ux = 0 has only the zero solution.
- \bigcirc d. The system Ux = 0 has infinitely many solutions

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The correct answer is: The system Ux = 0 has infinitely many solutions

Question 18	
Correct	
Mark 1.00 out of 1.00	
If A is an $n \times n$ matrix and the system $Ax = b$ has infinitely many solutions	s, then
Select one:	
\bigcirc a. A is symmetric	
\bigcirc b. A has a row of zeros	
\bigcirc c. A singular	
✓	
\bigcirc d. A is nonsingular	

The correct answer is: A singular

Correct

Mark 1.00 out of 1.00

Let $A = \begin{pmatrix} 1 & -1 & 1 \\ 3 & -2 & 2 \\ -2 & 6 & 4 \end{pmatrix}$, then det(A) =Select one: \bigcirc a. 5 \bigcirc b. 0 \bigcirc c. 10

 \bigcirc d. 9

The correct answer is: $10 \ \ \,$

Question 20

Correct

Mark 1.00 out of 1.00

The adjoint of the matrix $\begin{pmatrix} 2 & 5 \\ 1 & 3 \end{pmatrix}$ is Select one:

$$\bigcirc a. \begin{pmatrix} 2 & -1 \end{pmatrix}$$
$$\bigcirc b. \begin{pmatrix} -2 & 1 \\ 5 & -3 \end{pmatrix}$$
$$\bigcirc c. \begin{pmatrix} 3 & -5 \\ -1 & 2 \end{pmatrix}$$
$$\checkmark$$
$$\bigcirc d. \begin{pmatrix} -3 & 5 \\ 1 & -2 \end{pmatrix}$$

The correct answer is: $\begin{pmatrix} 3 & -5 \\ -1 & 2 \end{pmatrix}$

Question 21
Correct Mark 1.00 out of 1.00
If A is a 3×3 matrix such that $det(A) = 2$, then $det(3A) = 6$
Select one:
 ○ a. True ○ b. False ✓
The correct answer is: False
Question 22 Correct
Mark 1.00 out of 1.00
In the linear system $Ax = b$, if $b = a_1 = a_2 + 3a_4$ then the system $Ax = b$ has infinite solutions.
Select one:
O a. False
⊙ b. True 🗸
The correct answer is: True
Question 23
Correct
Mark 1.00 out of 1.00
If $AB = AC$, and $ A \neq 0$, then
Select one:
\bigcirc a. $A = 0$
\bigcirc b. $B \neq C$
\bigcirc c. $A = C$
$ \bigcirc d. B = C. $
The correct answer is: $B = C$.

Question 24 Correct Mark 1.00 out of 1.00

Select one:

 \bigcirc a. A^{-1} is nonsingular and symmetric \checkmark

 \bigcirc b. A^{-1} is nonsingular and not symmetric

 \bigcirc c. A^{-1} is singular and symmetric

 $\bigcirc\,$ d. A^{-1} is singular and not symmetric

The correct answer is: A^{-1} is nonsingular and symmetric

Question 25				
Correct				
Mark 1.00 out of 1.00				
If A is a 3×3 matrix with det(A) = 2. Then det($adj(A)$) =				
Select one:				
⊙ a.4.				
○ b. 2.				
○ c. −2.				
○ d4.				

The correct answer is: 4.

Correct

Mark 1.00 out of 1.00

If
$$(A|b) = \begin{pmatrix} 1 & 2 & -1 & | & 0 \\ 2 & 3 & 1 & | & -1 \\ 1 & 1 & \alpha & | & \beta \end{pmatrix}$$
, then the system is inconsistent if

Select one:

 $\bigcirc a. \alpha \neq 2 \text{ and } \beta \text{ any number}$ $\bigcirc b. \alpha = 2 \text{ and } \beta = -1$ $\bigcirc c. \alpha \neq 2 \text{ and } \beta \neq -1$ $\bigcirc d. \alpha = 2 \text{ and } \beta \neq -1$

× .

The correct answer is: $\alpha=2$ and $\beta\neq-1$

Question 27

Correct Mark 1.00 out of 1.00

If AB = 0, where A and B are $n \times n$ nonzero matrices. Then

Select one:

- \bigcirc a. either A = 0 or B = 0
- \bigcirc b. either A or B is singular
- \bigcirc c. both *A*, *B* are nonsingular.
- \bigcirc d. both A, B are singular.
 - ✓

The correct answer is: both A, B are singular.

Question 28

Correct Mark 1.00 out of 1.00

If y, z are solutions to Ax = b, then $\frac{1}{3}y + \frac{3}{4}z$ is a solution of the system Ax = b.

Select one:

🔘 b. False 🗸

Correct

Mark 1.00 out of 1.00

Let $A = \begin{pmatrix} 1 & 1 & 0 \\ 1 & a & 1 \\ 1 & 1 & 2 \end{pmatrix}$. the value(s) of a that make A nonsingular Select one: \bigcirc a. $a \neq 1$ \checkmark \bigcirc b. $a = \frac{1}{2}$ \bigcirc c. a = 1

 \bigcirc d. $a \neq \frac{1}{2}$

The correct answer is: $a \neq 1$

Question 30

Correct

Mark 1.00 out of 1.00

Let $(1, 2, 0)^T$ and $(2, 1, 1)^T$ be the first two columns of a 3×3 matrix A and $(1, 1, 1)^T$ be a solution of the system $Ax = (2, 1, 3)^T$. Then the third column of the matrix A is

Select one: a. $(-1, -2, 2)^T$. b. $(-1, -1, 2)^T$. c. $(1, 1, 0)^T$. d. $(4, -1, 1)^T$.

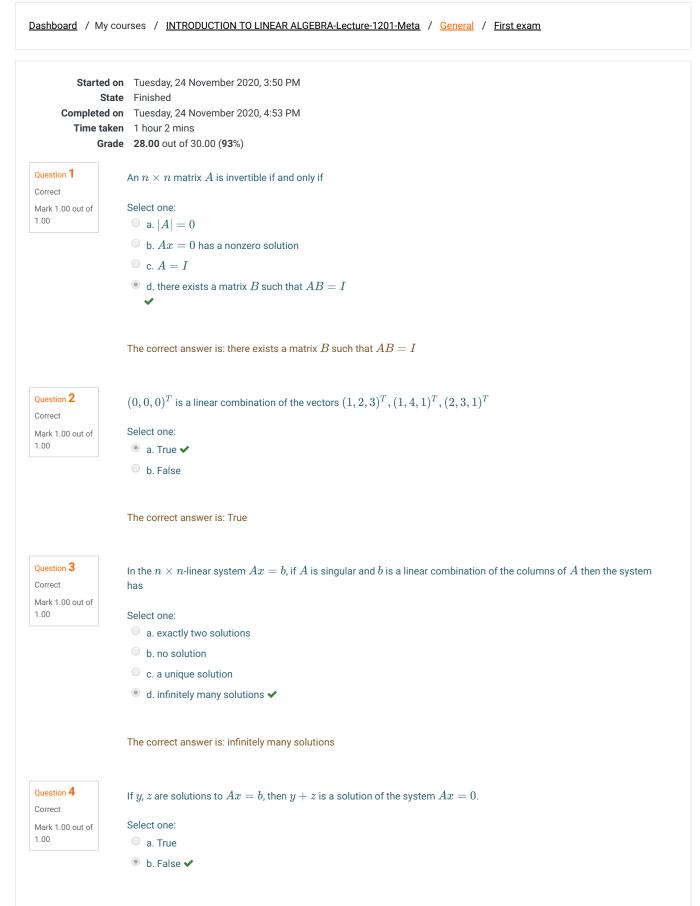
The correct answer is: $(-1, -2, 2)^T$.

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Announcements

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The correct answer is: False

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Question 5	Any two $n imes n$ -singular matrices are row equivalent.
Incorrect Mark 0.00 out of	Select one:
1.00	a. False
	• b. True ×
	The correct answer is: False
Question 6	If A is a $4 imes 3$ -matrix, $b\in \mathbb{R}^4$, and the system $Ax=b$ is consistent, then $Ax=b$ has a unique solution.
Correct Mark 1.00 out of	Select one:
1.00	a. True
	● b. False ✓
	The correct answer is: False
Question 7	
Correct	$\begin{pmatrix} 1 & 2 & -1 & & 0 \\ 2 & 2 & 1 & & -1 \end{pmatrix}$ then the system has only and call tion if
Mark 1.00 out of	If $(A b)=egin{pmatrix} 1&2&-1& &0\\ 2&3&1& &-1\\ 1&1&lpha& η \end{pmatrix}$, then the system has only one solution if
1.00	$(1 1 \alpha \beta)$
	Select one:
	${}^{\circledast}$ a. $lpha eq 2$ and eta any number
	$^{\odot}~$ b. $lpha eq 2$ and $eta eq -1$
	$^{\odot}$ c. $lpha=2$ and $eta=-1$
	$^{\odot}~$ d. $lpha=2$ and $eta eq-1$
	The correct answer is: $lpha eq 2$ and eta any number
Question 8 Correct	If A is a nonsingular $3 imes 3$ -matrix, then the reduced row echelon form of A has no row of zeros.
Mark 1.00 out of	Select one:
1.00	a. False
	● b. True
	The correct answer is: True
Question 9 Correct	If ${\cal E}$ is an elementary matrix then one of the following statements is not true
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. E^{-1} is an elementary matrix.
	$^{\odot}$ b. E is nonsingular.
	$^{\circ}$ c. E^{T} is an elementary matrix.
	• d. $E + E^T$ is an elementary matrix.

The correct answer is: $\boldsymbol{E} + \boldsymbol{E}^T$ is an elementary matrix.

Question 10	If A is a $3 imes 3$ matrix with $\det(A)=-2$. Then $\det(adj(A))=$
Correct	Select one:
Mark 1.00 out of 1.00	 a. 4.
	 ✓ u ✓
	◎ b. −4.
	◎ c. −8.
	○ d. 8.
	The correct answer is: 4.
Question 11 Correct	If A is singular and B is nonsingular $n imes n$ -matrices, then AB is
Mark 1.00 out of	Select one:
1.00	● a. singular
	b. may or may not be singular
	C. nonsingular
	The correct answer is: singular
Question 12 Correct Mark 1.00 out of 1.00	If $(A b)=egin{pmatrix} 1&1&2& &4\\ 2&-1&2& &6\\ 1&1&2& &5 \end{pmatrix}$, then the system $Ax=b$ is inconsistent
	Select one:
	In a. True
	b. False
	The correct answer is: True
Question 13 Correct	If A is a singular $n imes n$ -matrix, $b\in \mathbb{R}^n$, then the system $Ax=b$
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. has either no solution or an infinite number of solutions 🗸
	b. has infinitely many solutions.
	c. has a unique solution
	d. is inconsistent
	The correct answer is: has either no solution or an infinite number of solutions
Question 14 Correct	If A is symmetric and skew symmetric then $A=0.$ (A is skew symmetric if $A=-A^T$).
	If A is symmetric and skew symmetric then $A = 0$. (A is skew symmetric if $A = -A^T$). Select one: • a. True \checkmark

Question 15 Correct	If $A=LU$ is the LU -factorization of a matrix A , and A is singular, then
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. L and U are both singular
	It is singular and L is nonsigular
	\bigcirc c. L and U are both nonsingular
	• d. L is singular and U is nonsigular
	The correct answer is: U is singular and L is nonsigular
Question 16 Correct	If A and B are singular matrices, then $A+B$ is also singular.
Mark 1.00 out of	Select one:
1.00	● a. False
	b. True
	The correct answer is: False
Question 17 Correct	If A is a singular matrix, then A can be written as a product of elementary matrices.
Mark 1.00 out of	Select one:
1.00	● a. False
	b. True
	The correct answer is: False
Question 18 Correct Mark 1.00 out of	Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (4,4,5)^T$. Then the third column of the matrix A is
1.00	Select one:
	• a. $(1, 1, 4)^T$.
	• b. $(4, -1, 1)^T$.
	\circ c. $(-1, -1, -4)^T$.
	\bigcirc d. $(-1, -2, 1)^T$.
	The correct answer is: $(1,1,4)^T$.
Question 19 Correct	Let A be a $3 imes 4$ matrix which has a row of zeros, and let B be a $4 imes 4$ matrix , then AB has a row of zeros.
Mark 1.00 out of	Select one:
1.00	● a. True ✓
	b. False

The correct answer is: True

Correct Mark 1.00 out of 1.00

Let
$$A$$
 be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then

Select one:

- ${igledown}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k$
- igodot b. A is the zero matrix
- ${}^{igodoldsymbol{\circ}}$ c. The system Ax=0 has only one solution
- $^{\odot}\,$ d. A is singular.
 - ✓ .

The correct answer is: \boldsymbol{A} is singular.

Question 21

Correct Mark 1.00 out of 1.00

If ${\boldsymbol E}$ is an elementary matrix of type III, then ${\boldsymbol E}^T$ is

Select one:

- $\, \bigcirc \,$ a. an elementary matrix of type I
- $\,\bigcirc\,$ b. an elementary matrix of type II
- $^{\odot}\,$ c. not an elementary matrix
- $^{\odot}\,$ d. an elementary matrix of type III 🗸

The correct answer is: an elementary matrix of type III

Question 22

Correct Mark 1.00 out of 1.00

	(1	-1	1	
A =	3	-2	2	, then $\det(A) =$
	$\setminus -2$	-1	3 /	1

Select one:

Let

۲	a. 2
	✓
	b. 3
	c. 5
	d. 0

The correct answer is: $2 \ \ \,$

Correct Mark 1.00 out of 1.00

If the row echelon form of
$$(A|b)$$
 is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 0 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• c. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• d. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$

The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha \end{pmatrix}$

Question 24

Correct Mark 1.00 out of 1.00 If A, B are n imes n-skew-symmetric matrices(A is skew symmetric if $A^T = -A$), then AB + BA is symmetric

- Select one:
- a. True ✓● b. False

The correct answer is: True

Question 25

Correct Mark 1.00 out of 1.00 Let A be a 4×3 -matrix with $a_2 - a_3 = 0$. If $b = a_1 + a_2 + a_3$, where a_j is the jth column of A, then the system Ax = b will have infinitely many solutions.

- Select one:
- a. False
- 💿 b. True 🗸

The correct answer is: True

Correct Mark 1.00 out of 1.00

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If A is a 3 × 3-matrix and the system Ax = \begin{pmatrix} 5\\1\\3 \end{pmatrix} has a unique solution, then the system Ax = \begin{pmatrix} 0\\0\\0 \end{pmatrix}
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Select one:

- a. is inconsistent
- b. has only the zero solution.
- c. has infinitely many solutions

The correct answer is: has only the zero solution.

Question 27

Incorrect Mark 0.00 out of 1.00 If AB=0, where A and B are n imes n nonzero matrices. Then

Select one:

×

- \bigcirc b. both A, B are singular.
- \bigcirc c. both A, B are nonsingular.
- ${}^{\bigcirc}\,$ d. either A=0 or B=0

The correct answer is: both A, B are singular.

Question 28

Correct Mark 1.00 out of 1.00 If x_0 is a solution of the nonhomogeneous system Ax = b and x_1 is a solution of the homogeneous system Ax = 0. Then $x_1 + x_0$ is a solution of

Select one:

Select one:

- \bigcirc a. the system Ax=0
- ${}^{igodold }$ b. the system Ax=2b
- $^{igodoldsymbol{ imes}}$ c. the system Ax=Ab
- ullet d. the system Ax=b

The correct answer is: the system Ax = b

Question 29

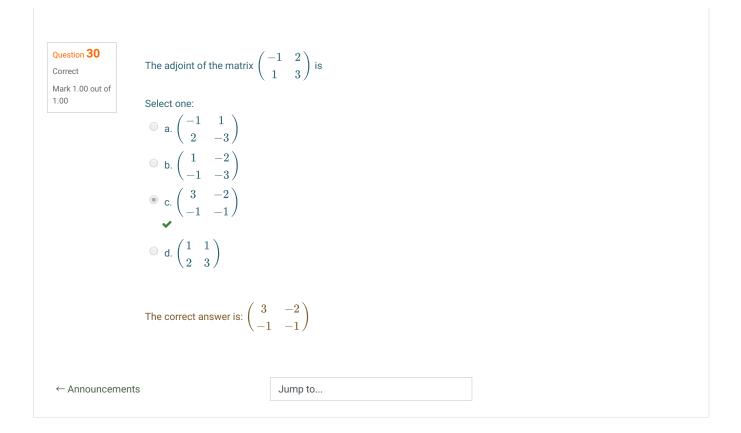
Correct Mark 1.00 out of 1.00

- $^{igodoldsymbol{\circ}}$ a. The system Ax=b is inconsistent
- ightarrow b. The system Ax=b has only two solutions
- ullet c. The system Ax=b has a unique solution

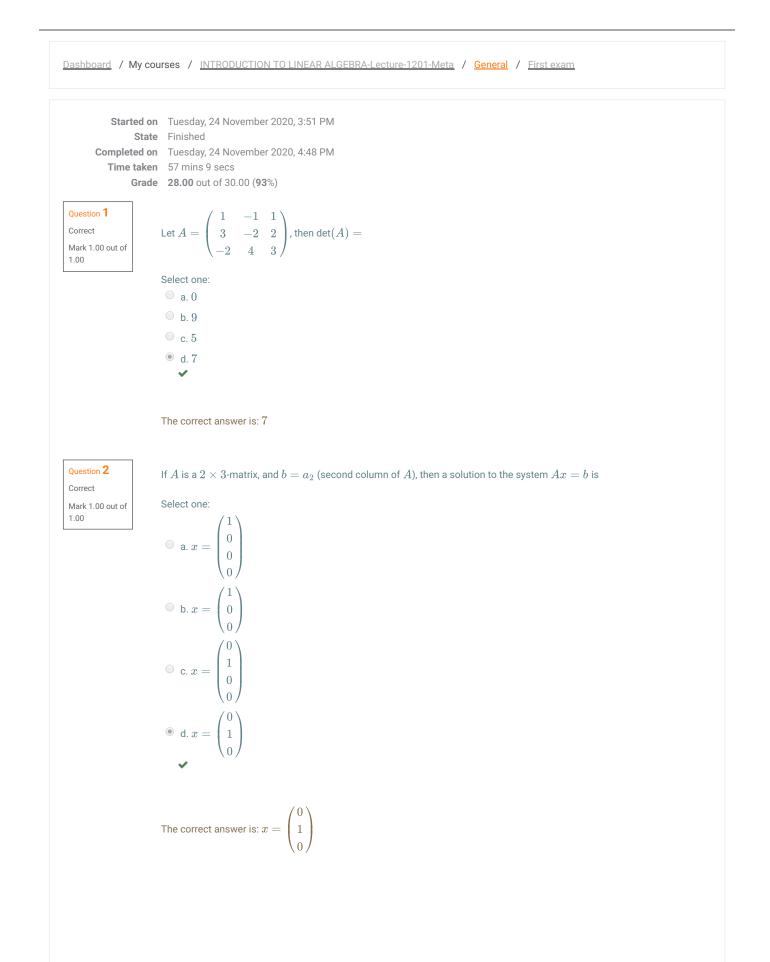
If A is a nonsingular n imes n matrix, $b \in \mathbb{R}^n$, then

ightarrow d. The system Ax=b has infinitely many solutions

The correct answer is: The system Ax = b has a unique solution



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Correct Mark 1.00 out of 1.00

If A is a 2 imes 2 matrix with $\det(A) = -2$. Then $\det(adj(A)) =$

Select one:						
	a. 2.					
۲	b. -2 .					
~						
	c. −4.					
	d. 4.					

The correct answer is: -2.

Question 4

Correct Mark 1.00 out of 1.00

If A, B, C are n imes n nonsingular matrices, then $A^2 - B^2 = (A+B)(A-B).$

Select one:

a. False b. True

The correct answer is: False

Question 5 Correct Mark 1.00 out of 1.00

If \boldsymbol{A} is a singular matrix, then \boldsymbol{A} can be written as a product of elementary matrices.

Sele	ct	one:	
۲	a.	False	~

b. True

The correct answer is: False

Question 6

Correct Mark 1.00 out of 1.00

The adjoint of the matrix $\begin{pmatrix} 5 & 2 \\ -1 & 6 \end{pmatrix}$ is

Select one:

• a.
$$\begin{pmatrix} 5 & -1 \\ 2 & 6 \end{pmatrix}$$

• b. $\begin{pmatrix} 6 & -2 \\ 1 & 5 \end{pmatrix}$
• c. $\begin{pmatrix} -5 & -1 \\ 2 & -6 \end{pmatrix}$
• d. $\begin{pmatrix} -6 & 2 \\ -1 & -5 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 6 & -2 \\ 1 & 5 \end{pmatrix}$

Question 7 Correct Mark 1.00 out of 1.00	If A and B are $n \times n$ matrices such that $Ax \neq Bx$ for all nonzero $x \in \mathbb{R}^n$. Then Select one: a. A and B are singular. b. $A - B$ is singular. c. A and B are nonsingular. d. $A - B$ is nonsingular.
	The correct answer is: $A-B$ is nonsingular.
Question 8 Incorrect Mark 0.00 out of 1.00	If y , z are solutions to $Ax = b$, then $\frac{1}{3}y + \frac{3}{4}z$ is a solution of the system $Ax = b$. Select one: a. False b. True X
	The correct answer is: False
Question 9 Correct Mark 1.00 out of 1.00	Let A be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then
	Select one: a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A = E_1 E_2 \cdots E_k$ b. The system $Ax = 0$ has only one solution c. A is singular. d. A is the zero matrix
	The correct answer is: A is singular.
Question 10 Correct Mark 1.00 out of 1.00	If A is symmetric and skew symmetric then $A = 0$. (A is skew symmetric if $A = -A^T$). Select one: \bigcirc a. False \circledast b. True \checkmark
	The correct answer is: True

Question **11** Correct Mark 1.00 out of

1.00

An n imes n matrix A is invertible if and only if

ut of Select one:

a. there exists a matrix B such that AB = I

• b. A = I• c. |A| = 0

 ${igledown}$ d. Ax=0 has a nonzero solution

The correct answer is: there exists a matrix \boldsymbol{B} such that $\boldsymbol{A}\boldsymbol{B}=\boldsymbol{I}$

Question 12 Correct Mark 1.00 out of 1.00

If A,B,C are n imes n-matrices with A nonsigular and AB=AC , then B=C

Select one:

a. Falseb. True

The correct answer is: True

Question **13** Correct Mark 1.00 out of 1.00 In the square linear system Ax = b, if A is singular and b is not a linear combination of the columns of A then the system

Select one:

- $^{\odot}\,$ a. has a unique solution
- b. has infinitely many solutions
- c. can not tell
- d. has no solution

The correct answer is: has no solution

Question 14 Correct Mark 1.00 out of

1.00

Any two n imes n-singular matrices are row equivalent.

Select one: a. False

b. True

The correct answer is: False

Question **15** Correct Mark 1.00 out of 1.00

If A is a singular n imes n-matrix, $b \in \mathbb{R}^n$, then the system Ax = b

Select one:

- a. is inconsistent
- b. has a unique solution
- ${\ensuremath{\, \circ }}$ c. has either no solution or an infinite number of solutions ${\ensuremath{\, \cdot }}$
- d. has infinitely many solutions.

The correct answer is: has either no solution or an infinite number of solutions

Question **16** Correct Mark 1.00 out of 1.00

Let A be a 3×4 matrix which has a row of zeros, and let B be a 4×4 matrix , then AB has a row of zeros.

Select one: ● a. True ✔

🔍 b. False

The correct answer is: True

Question **17** Correct Mark 1.00 out of 1.00

If ${\boldsymbol E}$ is an elementary matrix of type III, then ${\boldsymbol E}^T$ is

Select one:

- $\,\bigcirc\,$ a. an elementary matrix of type II
- b. an elementary matrix of type I
- $^{\odot}\,$ c. an elementary matrix of type III 🗸
- d. not an elementary matrix

The correct answer is: an elementary matrix of type III

Question 18
Correct
Mark 1.00 out of

1.00

	(1)	0	-2	-1	-2	
If the row echelon form of $\left(A b ight)$ is	0	1	1	-1	-1	then the general form of the solutions is given by
	0	0	1	1	0 /	

Select one:

• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• c. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$
• d. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$

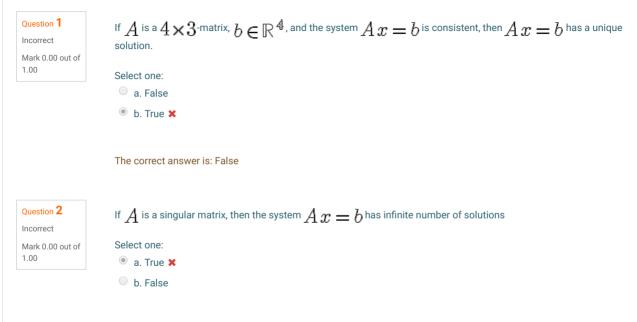
The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha\end{pmatrix}$

If $(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 0 & 3 & 2 & | & 1 \end{pmatrix}$ is the augmented matrix of the system Ax = b then the system has no solution Question 19 Incorrect Mark 0.00 out of 1.00 Select one: 🍥 a. False 🗙 b. True The correct answer is: True Question 20 If $(A|b)=egin{pmatrix} 1&2&-1&|&0\\ 2&3&1&|&-1\\ 1&1&lpha&|&eta \end{pmatrix}$, then the system is inconsistent if Correct Mark 1.00 out of 1.00 Select one: \bigcirc a. lpha
eq 2 and eta
eq -1 \bigcirc b. lpha
eq 2 and eta any number \odot c. lpha=2 and eta=-1 $^{\odot}\,$ d. lpha=2 and eta
eq-1The correct answer is: lpha=2 and eta
eq-1Question 21 Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3 imes 3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (5,2,4)^T$. Then the third column of the matrix A is Correct Mark 1.00 out of 1.00 Select one: • a. $(-2, 1, -3)^T$ • b. $(1, -1, -4)^T$. • c. $(2, -1, 3)^T$. • d. $(1, -1, 4)^T$. The correct answer is: $(2, -1, 3)^T$. Question 22 If A is a nonsingular n imes n matrix, then Correct Select one: Mark 1.00 out of 1.00 ${old o}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k.$ ~ • b. det(A) = 1 \bigcirc c. There is a singular matrix C such that A = CI. \bigcirc d. The system Ax = 0 has a nontrivial (nonzero) solution. The correct answer is: There are elementary matrices E_1, E_2, \dots, E_k such that $A = E_1 E_2 \dots E_k$.

Question 23 Correct	If A is a symmetric $n imes n$ -matrix and P any $n imes n$ -matrix, then PAP^T is
Mark 1.00 out of	Select one:
1.00	🍥 a. symmetric ✔
	b. not defined
	c. singular
	 d. not symmetric
	The correct answer is: symmetric
Question 24 Correct	If A is an $n imes n$ matrix and the system $Ax=b$ has infinitely many solutions, then
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. A is symmetric
	$^{\odot}$ b. A has a row of zeros
	 ● c. A singular ✓
	$^{\odot}$ d. A is nonsingular
	The correct answer is: A singular
Question 25 Correct	If A is a $3 imes 3$ matrix such that $det(A)=2$, then $\det(3A)=6$
Mark 1.00 out of	Select one:
1.00	● a. False
	b. True
	The correct answer is: False
Question 26 Correct	If A,B,C are $3 imes 3$ -matrices, $\det(A)=9, \det(B)=2, \det(C)=3$, then $\det(3C^TBA^{-1})=$
Mark 1.00 out of	Select one:
1.00	• a. 6
	• b. 18
	• c. 16
	O d. 2
	The correct answer is: 18
Question 27 Correct	If A and B are singular matrices, then $A+B$ is also singular.
Mark 1.00 out of	Select one: ● a. False ✔
	 b. True

Question 28 Correct	In the $n imes n$ -linear system $Ax = b$, if A is singular and b is a linear combination of the columns of A then the system has
Mark 1.00 out of	1192
1.00	Select one:
	a. no solution
	b. a unique solution
	e. infinitely many solutions ✓
	d. exactly two solutions
	The correct answer is: infinitely many solutions
Question 29 Correct	If A is a $4 imes 3$ -matrix, $b\in \mathbb{R}^4$, and the system $Ax=b$ is consistent, then $Ax=b$ has a unique solution.
Mark 1.00 out of	Select one:
1.00	In a. False
	b. True
	The correct answer is: False
Question 30 Correct Mark 1.00 out of 1.00	If A is a 3×3 -matrix and the system $Ax = \begin{pmatrix} 5 \\ 1 \\ 3 \end{pmatrix}$ has a unique solution, then the system $Ax = \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$
	Select one:
	a. has infinitely many solutions
	● b. has only the zero solution. ✓
	◎ c. is inconsistent
	The correct answer is: has only the zero solution.
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Question 4

Correct Mark 1.00 out of 1.00

If
$$(A|b) = \begin{pmatrix} 1 & 2 & -1 & | & 0 \\ 2 & 3 & 1 & | & -1 \\ 1 & 1 & \alpha & | & \beta \end{pmatrix}$$
, then the system has infinite number of solutions if

Select one:

• a. $\alpha \neq 2$ and β any number • b. $\alpha = 2$ and $\beta \neq -1$ • c. $\alpha = 2$ and $\beta = -1$ • d. $\alpha \neq 2$ and $\beta \neq -1$

The correct answer is: lpha=2 and eta=-1

Question 5 Correct Mark 1.00 out of 1.00 Let $A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&1&3 \end{pmatrix}$, then $\det(A)=$

a. 4
b. 0
c. 8
d. 1

Select one:

The correct answer is: 4

Question **6** Correct

Mark 1.00 out of 1.00

Select one:

b. True

The correct answer is: True

Question 7

Incorrect Mark 0.00 out of 1.00 If a matrix B is obtained from A by multiplying a row of A by a real number c, then |A| = c|B|.

If $(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 1 & 1 & 2 & | & 5 \end{pmatrix}$, then the system Ax = b is inconsistent

Select one: a. False

b. True ×

Question 8	In the square linear system $Ax=b$, if A is singular and b is not a linear combination of the columns of A then the
ncorrect	system
Mark 0.00 out of 1.00	Select one:
	a. can not tell
	 b. has a unique solution
	c. has infinitely many solutions ×
	 d. has no solution
	The correct answer is: has no solution
Question 9 Correct	If E is an elementary matrix of type III, then E^T is
Mark 1.00 out of	Select one:
.00	a. not an elementary matrix
	● b. an elementary matrix of type III
	c. an elementary matrix of type I
	 d. an elementary matrix of type II
	The correct answer is: an elementary matrix of type III
Question 10 Correct	If $AB=0$, where A and B are $n imes n$ nonzero matrices. Then
Mark 1.00 out of	Select one:
1.00	${}^{\odot}$ a. both A,B are nonsingular.
	Is both A, B are singular. Image:
	$^{\odot}$ c. either A or B is singular
	$^{\odot}$ d. either $A=0$ or $B=0$
	The correct answer is: both A,B are singular.
Question 11	If A,B are $n imes n$ -skew-symmetric matrices(A is skew symmetric if $A^T=-A$), then $AB+BA$ is symmetric
Correct Mark 1.00 out of	Select one:
.00	• a. False
	● b. True
	The correct answer is: True
Question 12 Correct	If A is a $3 imes 3$ matrix such that $det(A)=2$, then $\det(3A)=6$
Mark 1.00 out of	Select one: a. True
	● b. False

Correct Mark 1.00 out of 1.00 The adjoint of the matrix $\begin{pmatrix} 2 & 5 \\ 1 & 3 \end{pmatrix}$ is

Select one:

.

a.
$$\begin{pmatrix} -5 & 3\\ 2 & -1 \end{pmatrix}$$

b.
$$\begin{pmatrix} -3 & 5\\ 1 & -2 \end{pmatrix}$$

c.
$$\begin{pmatrix} 3 & -5\\ -1 & 2 \end{pmatrix}$$

c.
$$\begin{pmatrix} -2 & 1\\ 5 & -3 \end{pmatrix}$$

The correct answer is: $\begin{pmatrix} 3 & -5 \\ -1 & 2 \end{pmatrix}$

Question 14

Correct Mark 1.00 out of 1.00 Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (2,1,3)^T$. Then the third column of the matrix A is

Select one:
a.
$$(1, 1, 0)^T$$
.
b. $(-1, -2, 2)^T$.
c. $(4, -1, 1)^T$.
d. $(-1, -1, 2)^T$.

The correct answer is: $(-1, -2, 2)^T$.

Question **15** Correct Mark 1.00 out of 1.00 $(0,0,0)^T$ is a linear combination of the vectors $(1,2,3)^T, (1,4,1)^T, (2,3,1)^T$

Select one: ● a. True ✔

b. False

The correct answer is: True

Question 16

Correct Mark 1.00 out of 1.00 Let A be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then

Select one:

- ${}^{igodoldsymbol{\circ}}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k$
- $^{\odot}\,$ b. A is singular.
 - ✓ _
- $^{igodoldsymbol{\circ}}$ c. A is the zero matrix
- ${}^{igodoldsymbol{\circle}}$ d. The system Ax=0 has only one solution

et A be a $3 imes 4$ matrix which has a row of zeros, and let B be a $4 imes 4$ matrix , then AB has a row of zeros.
elect one:
🖻 a. False 🗙
b. True
ne correct answer is: True
A is a $4 imes 3$ matrix such that $Ax=0$ has only the zero solution, and $b=egin{pmatrix}1\\3\\2\\0\end{pmatrix}$, then the system $Ax=b$
elect one:
a. is either inconsistent or has an infinite number of solutions
b. is inconsistent
c. is either inconsistent or has one solution
d. has exactly one solution ×
ne correct answer is: is either inconsistent or has one solution
x_0 is a solution of the nonhomogeneous system $Ax=b$ and x_1 is a solution of the homogeneous system $Ax=0.$ nen x_1+x_0 is a solution of
elect one:
a. the system $Ax=0$
b. the system $Ax=2b$
c. the system $Ax = Ab$
d. the system $Ax = b$
ne correct answer is: the system $Ax=b$
A,B are two square nonzero matrices and $AB=0$ then both A and B are singular
elect one:
a. False
🖻 b. True 🗸
ne correct answer is: True

Question 21 Incorrect

Question 21 Incorrect	If A is a $3 imes 3$ matrix with $\det(A)=-1.$ Then $\det(adj(A))=$
Mark 0.00 out of	Select one:
1.00	● a1.
	×
	● b. 3.
	○ c. −3.
	d. 1.
	The correct answer is: 1.
Question 22 Correct	If A is a $3 imes 5$ matrix, then the system $Ax=0$
Mark 1.00 out of	Select one:
1.00	a. has no solution.
	b. has only the zero solution
	🍭 c. has infinitely many solutions ✔
	d. is inconsistent
	The correct answer is: has infinitely many solutions
Question 23 Correct	If A is a nonsingular $n imes n$ matrix, $b\in \mathbb{R}^n$, then
Mark 1.00 out of	Select one:
1.00	$^{\bigcirc}$ a. The system $Ax=b$ is inconsistent
	igodoldoldoldoldoldoldoldoldoldoldoldoldol
	$^{igodold m}$ c. The system $Ax=b$ has only two solutions
	 d. The system $Ax = b$ has a unique solution
	The correct answer is: The system $Ax=b$ has a unique solution

Question 24

Correct Mark 1.00 out of 1.00

If A, B are n imes n symmetric matrices then AB is symmetric.

Sele	ect	one
۲	a.	Fals

Sele	elect one:	
۲	a. False 🗸	
	b. True	

Correct Mark 1.00 out of 1.00

Select one: a. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}$ b. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$ c. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$ d. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$

The correct answer is: $x = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$

• a. A - B is nonsingular. • b. A and B are nonsingular.

C. A - B is singular. d. A and B are singular.

Select one:

×

Question 26 Incorrect Mark 0.00 out of 1.00

If A and B are n imes n matrices such that Ax
eq Bx for all nonzero $x\in \mathbb{R}^n.$ Then

Question 27

If A is a nonsingular n imes n matrix, then

The correct answer is: A-B is nonsingular.

Mark 1.00 out of 1.00

Select one: $\ \ \, \odot$ a. There are elementary matrices E_1,E_2,\cdots,E_k such that $A=E_1E_2\cdots E_k.$

- ✓
- $\hfill {\hfill 0}$ b. There is a singular matrix C such that A=CI.
- ${}^{igodold }$ c. The system Ax=0 has a nontrivial (nonzero) solution.

 \bigcirc d. det(A) = 1

The correct answer is: There are elementary matrices E_1, E_2, \cdots, E_k such that $A = E_1 E_2 \cdots E_k$.

Question 28	Any elementary matrix is nonsigular
Correct	
Mark 1.00 out of 1.00	Select one:
1.00	a. False
	● b. True ✓
	The correct answer is: True
Question 29 Correct	If A is singular and B is nonsingular $n imes n$ -matrices, then AB is
Mark 1.00 out of	Select one:
1.00	● a. singular
	b. may or may not be singular
	C. nonsingular
	The correct answer is: singular
Question 30 Correct	In the $n imes n$ -linear system $Ax=b$, if A is singular and b is a linear combination of the columns of A then the system has
Mark 1.00 out of 1.00	Select one:
Mark 1.00 out of 1.00	Select one:
	a. exactly two solutions
	 a. exactly two solutions b. no solution
	 a. exactly two solutions b. no solution c. a unique solution
	 a. exactly two solutions b. no solution
	 a. exactly two solutions b. no solution c. a unique solution
	 a. exactly two solutions b. no solution c. a unique solution d. infinitely many solutions

Data retention summary Switch to the standard theme

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201-Meta / General / First exam

Started on Tuesday, 24 November 2020, 4:00 PM State Finished Completed on Tuesday, 24 November 2020, 5:07 PM Time taken 1 hour 7 mins Grade 24.00 out of 30.00 (80%) Question 1 If A, B, C are 3×3 -matrices, $\det(A) = 9, \det(B) = 2, \det(C) = 3$, then $\det(3C^TBA^{-1}) =$ Correct Select one: Mark 1.00 out of 1.00 🔍 a. 6 b. 16 • c. 18 \checkmark \bigcirc d. 2 The correct answer is: 18 Question 2 Let $A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&-2&3 \end{pmatrix}$, then $\det(A)=$ Correct Mark 1.00 out of 1.00 Select one: ● a.1 \checkmark **b**. 9 • c. 7 d. 0 The correct answer is: 1 The adjoint of the matrix $egin{pmatrix} 4 & 1 \\ 2 & -1 \end{pmatrix}$ is Question 3 Correct Mark 1.00 out of 1.00 Select one: • a. $\begin{pmatrix} -1 & -1 \\ -2 & 4 \end{pmatrix}$ \bigcirc b. $\begin{pmatrix} -1 & -2 \\ -3 & -5 \end{pmatrix}$ \odot c. $\begin{pmatrix} 4 & -1 \\ -2 & -1 \end{pmatrix}$ \bigcirc d. $\begin{pmatrix} -1 & 2 \\ 1 & -4 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} -1 & -1 \\ -2 & 4 \end{pmatrix}$

Correct Mark 1.00 out of 1.00

$$\mathsf{lf}A = \begin{pmatrix} 1 & 4 & -1 \\ 2 & 9 & 2 \\ -3 & -12 & 3 \end{pmatrix}$$

Select one:

• a.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ -3 & 0 & 1 \end{pmatrix}$$
•
• b. $L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ -3 & 0 & 0 \end{pmatrix}$
• c. $L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ 3 & 0 & 1 \end{pmatrix}$
• d. $L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ 3 & 0 & 0 \end{pmatrix}$

The correct answer is: $L=\begin{pmatrix} 1&0&0\\ 2&1&0\\ -3&0&1 \end{pmatrix}$

Question 5 Correct Mark 1.00 out of

1.00

Any two n imes n-singular matrices are row equivalent.

Select one: a. True

🍥 b. False 🗸

The correct answer is: False

Question **6** Correct Mark 1.00 out of

1.00

If \boldsymbol{A} is a nonsingular and symmetric matrix, then

Select one:

 ${}^{\bigcirc}\,$ a. A^{-1} is singular and symmetric

 $^{\odot}\,$ b. A^{-1} is singular and not symmetric

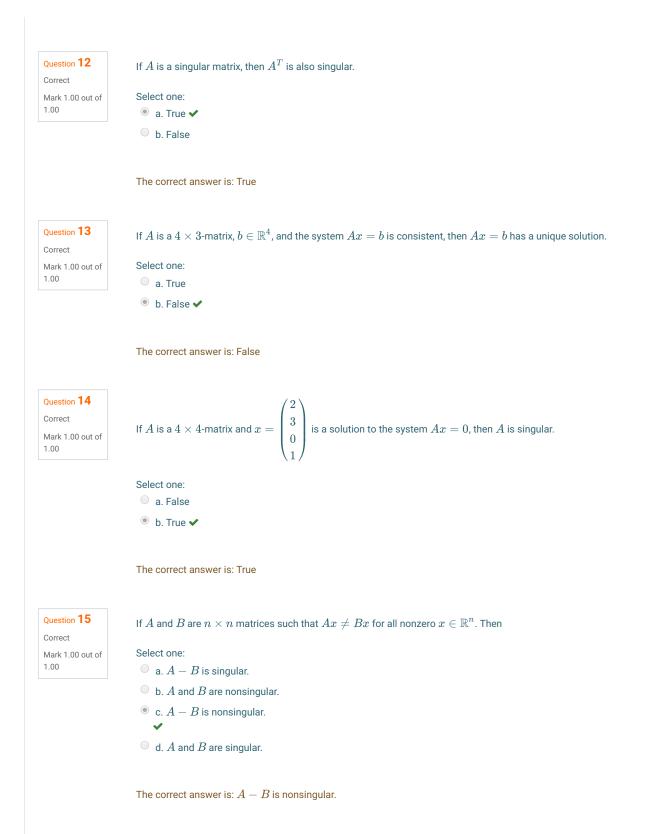
 ${\ensuremath{\,^{\circ}}}$ c. A^{-1} is nonsingular and symmetric

~

 $^{igodoldsymbol{\circ}}$ d. A^{-1} is nonsingular and not symmetric

The correct answer is: A^{-1} is nonsingular and symmetric

Question 7 Correct	If $AB=AC$, and $ A eq 0$, then
Mark 1.00 out of	Select one:
1.00	$^{igodoldsymbol{\circ}}$ a. $B eq C$
	$^{igodoldsymbol{ imes}}$ b. $A=0$
	$^{\odot}$ c. $A=C$
	• d. $B = C$.
	✓
	The correct answer is: $B = C$.
Question 8	If A,B are $n imes n$ symmetric matrices then AB is symmetric.
Incorrect Mark 0.00 out of	Select one:
1.00	 a. False
	b. True ×
	The correct answer is: False
Question 9 Correct	If y , z are solutions to $Ax=b$, then $y+z$ is a solution of the system $Ax=0.$
Mark 1.00 out of	Select one:
1.00	● a. False
	O b. True
	The correct answer is: False
Question 10 Correct Mark 1.00 out of 1.00	Let $A=egin{pmatrix} 1&1&0\ 1&a&1\ 1&1&2 \end{pmatrix}$. the value(s) of a that make A nonsingular
	Select one:
	$^{\bigcirc}$ a. $a eq rac{1}{2}$
	\bigcirc b. $a = 1$
	• c. $a = \frac{1}{2}$
	\checkmark
	The correct answer is: $a eq 1$
Question 11	If A, B are $n imes n$ -skew-symmetric matrices(A is skew symmetric if $A^T = -A$), then $AB + BA$ is symmetric
Incorrect	
Mark 0.00 out of	Select one:
1.00	a. True
	b. False ×



Question **16** Correct

Mark 1.00 out of 1.00

If
$$A = \begin{pmatrix} 1 & -2 & 5 \\ 4 & -11 & 8 \\ -3 & 3 & -27 \end{pmatrix}$$
 and $b = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$, then the system $Ax = b$ is consistent if and only if Select one:

a. $7b_1 - b_2 + b_3 \neq 1$
b. $7b_1 - b_2 + b_3 \neq 0$
c. $7b_1 - b_2 + b_3 = 1$
d. $7b_1 - b_2 + b_3 = 0$

The correct answer is: $7b_1-b_2+b_3=0$

Question **17** Correct Mark 1.00 out of 1.00

Any two n imes n-nonsingular matrices are row equivalent.

Select one:

a. False

~

🖲 b. True 🗸

The correct answer is: True

Question **18** Correct Mark 1.00 out of 1.00

A square matrix A is nonsingular iff its RREF (reduced row echelon form) is the identity matrix.

Select one: ◉ a. True ✔

b. False

The correct answer is: True

Correct Mark 1.00 out of 1.00

If the row echelon form of
$$(A|b)$$
 is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 0 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

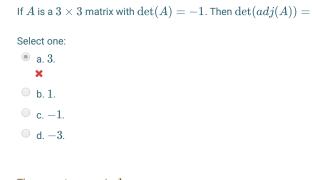
• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$
• c. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \\ \alpha \end{pmatrix}$
• d. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$

The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha \end{pmatrix}$

Question 20

Incorrect Mark 0.00 out of 1.00



The correct answer is: $1\!.$

Question 21 Correct Mark 1.00 out of 1.00

If A is a 3 imes 3 matrix such that det(A)=2, then $\det(3A)=6$

Select one: a. True

● b. False ✓

Question 22 If A is a 3 imes 5 matrix, then the system Ax=0Correct Select one: Mark 1.00 out of 1.00 a. is inconsistent b. has infinitely many solutions c. has no solution. d. has only the zero solution The correct answer is: has infinitely many solutions Question 23 Let U be an n imes n-matrix in reduced row echelon form and U
eq I , then Correct Select one: Mark 1.00 out of 1.00 • a. det(U) = 1 ${}^{igodold }$ b. The system Ux=0 has only the zero solution. \bigcirc c. U is the zero matrix ${\ensuremath{\, extstyle \, }}$ d. The system Ux=0 has infinitely many solutions ~

The correct answer is: The system Ux=0 has infinitely many solutions

Question 24

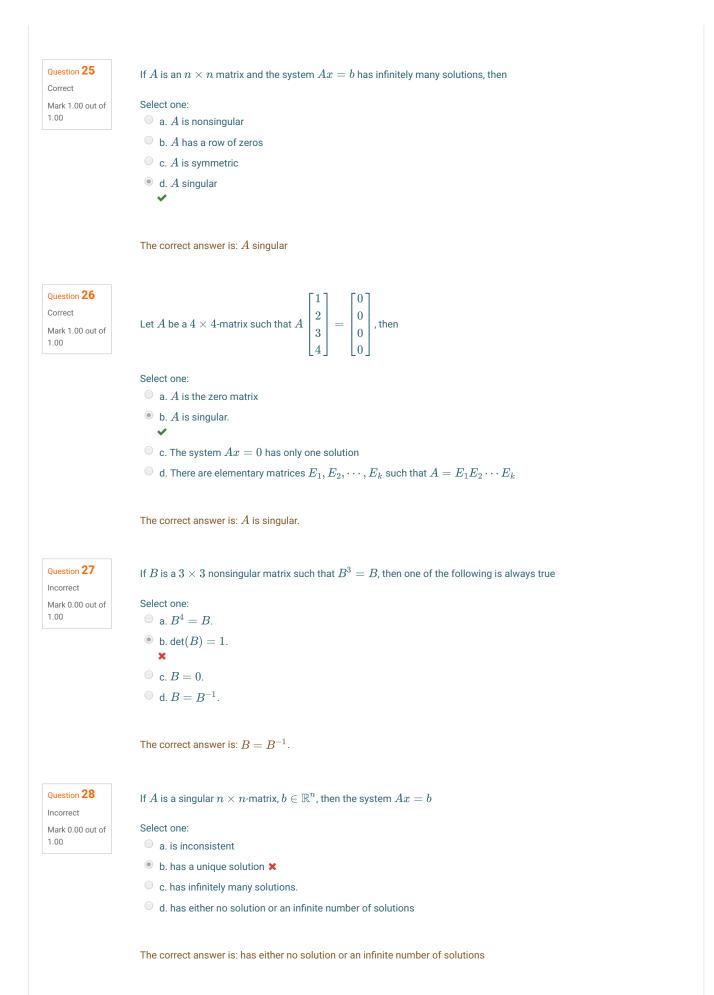
Mark 0.00 out of 1.00

Let A be a 3×3 -matrix with $a_1 = a_2$. If $b = a_2 - a_3$, where a_1, a_2, a_3 ar the columns of A, then a solution to the system Ax = b is

Select one:
a.
$$x = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$$

b. $x = \begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix}$
c. $x = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}$
d. $x = \begin{pmatrix} 0 \\ 0 \\ 2 \end{pmatrix}$

The correct answer is: $x = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$





Correct Mark 1.00 out of 1.00

Let
$$A=egin{pmatrix} 1&2&3&0\\ 1&1&2&1\\ 2&3&5&1 \end{pmatrix}$$
 and $b=egin{pmatrix} 2\\ 1\\ 4 \end{pmatrix}$. The system $Ax=b$

Select one:

- a. has exactly three solutions.
- b. has a unique solution
- $^{\odot}\,$ c. is inconsistent \checkmark
- d. has infinitely many solutions

The correct answer is: is inconsistent

Question **30** Correct Mark 1.00 out of 1.00

Let $(1, 2, 0)^T$ and $(2, 1, 1)^T$ be the first two columns of a 3×3 matrix A and $(1, 1, 1)^T$ be a solution of the system $Ax = (2, 1, -1)^T$. Then the third column of the matrix A is

Select one: a. $(1, 2, 2)^T$. b. $(-1, -2, -2)^T$. c. $(4, -1, 1)^T$.

• d.
$$(1, 1, 0)^T$$
.

The correct answer is: $(-1, -2, -2)^T$.

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Started onSunday, 11 April 2021, 8:35 AMStateFinishedCompleted onSunday, 11 April 2021, 9:03 AMTime taken27 mins 45 secsGrade10.00 out of 12.00 (83%)
```

Question 1

Correct Mark 1.00 out of 1.00

If x_1, x_2 are solutions to Ax = b, then $x_1 + x_2$ is a solution of the system Ax = b.

Select one:

- 🖲 a. False
- 🔵 b. True

The correct answer is: False

Question 2	
Correct	
Mark 1.00 out of 1.00	

Let A be an n imes n-matrix in reduced row echelon form and A
eq I , then

Select one:

- \bigcirc a. A is nonsingular
- \bigcirc b. det(A) = 1
- \odot c. A is the zero matrix
- \odot d. A is singular

The correct answer is: A is singular

If A is a singular matrix and U is the row echelon form of A, then $\det(U) =$.

Select one:

- 0 a. 1
- \odot b. none of the above
- \odot c. ± 1
- \bigcirc d. 0

The correct answer is: 0

Question 4	
Correct	
Mark 1.00 out of 1.00	

×

If x_1, x_2 are solutions to Ax = b, then $x_1 - x_2$ is a solution of the system Ax = b.

Select one:

- 💿 a. False
- 🔵 b. True

The correct answer is: False

Question 5	
Correct	
Mark 1.00 out of 1.00	

If AB=AC, and |A| eq 0, then

Select one:

• a. B = C. • b. $B \neq C$ • c. A = C

The correct answer is: B = C.

In the square linear system AX = b, if A is singular and b is a linear combination of the columns of A then the system has

Select one:

- a. no solution
- b. a unique solution
- c. infinitely many solutions
- 🔘 d. can not tell

The correct answer is: infinitely many solutions

Question 7	
Correct	
Mark 1.00 out of 1.00	

If B is a 3 imes 3 nonsingular matrix such that $B^3=B$, then one of the following is always true

Select one:

a. B⁴ = B.
b. B = 0.
c. det(B) = 1.
d. B = B⁻¹.

The correct answer is: $B = B^{-1}$.

Question 8	
Correct	
Mark 1.00 out of 1.00	

If A is a nonsingular 3 imes 3-matrix, then the reduced row echelon form of A has no row of zeros.

Select one:

🔘 a. False

💿 b. True

 \checkmark

The correct answer is: True

Question **9** Incorrect

Mark 0.00 out of 1.00

Let
$$A=egin{pmatrix} 1&1&0\ 1&a&1\ 1&1&2 \end{pmatrix}$$
 . the value(s) of a that make A nonsingular

Select one:

a. $a \neq \frac{1}{2}$ b. a = 1c. $a \neq 1$ d. $a = \frac{1}{2}$

The correct answer is: a
eq 1

Question 10	
Correct	
Mark 1.00 out of 1.00	

×

Let A be a 3 imes 4 matrix, and let B be a 4 imes 4 matrix which has a column of zeros, then AB has a column of zeros.

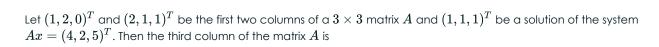
Select one:

🔍 a. False

💿 b. True

The correct answer is: True

Question 11	
Correct	
Mark 1.00 out of 1.00	



Select one:

- a. $(1, -1, 4)^T$. • b. $(4, -1, 1)^T$.
- \odot c. $(1, -1, -4)^T$.
- \bigcirc d. $(1, 1, 4)^T$.

The correct answer is: $(1, -1, 4)^T$.

Question 12 Correct Mark 1.00 out of 1.00

Let
$$A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&4&3 \end{pmatrix}$$
 , then $\det(A)=$

Select one:

- a. 7
 b. 5
 c. 0
- i d. 9

The correct answer is: 7

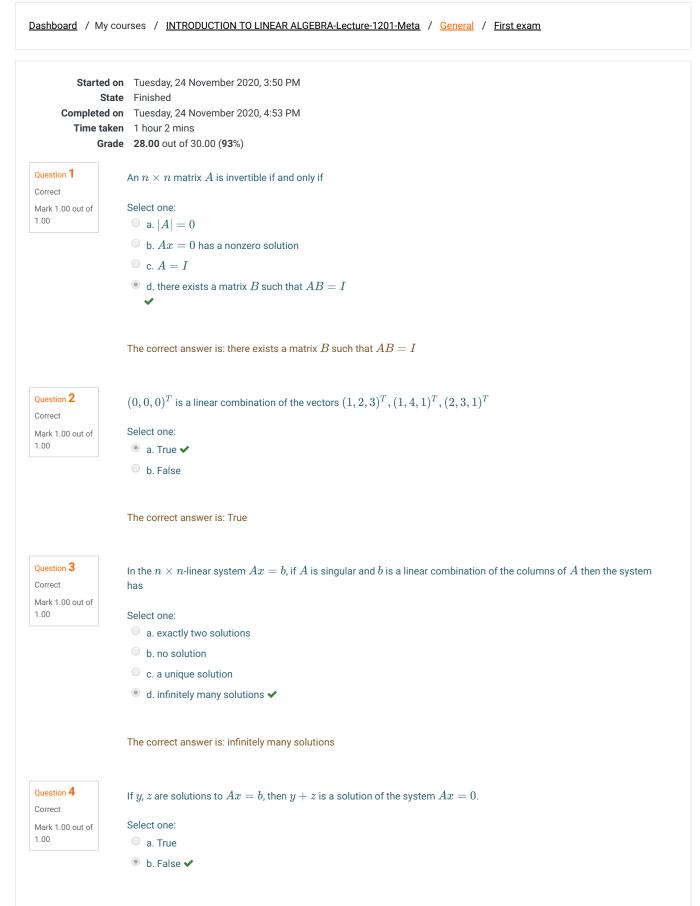
◀ Quiz 3

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Quiz 1 (chapter one) ►

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The correct answer is: False

10. I aloc

Question 5	Any two $n imes n$ -singular matrices are row equivalent.
Incorrect Mark 0.00 out of	Select one:
1.00	a. False
	• b. True ×
	The correct answer is: False
Question 6	If A is a $4 imes 3$ -matrix, $b\in \mathbb{R}^4$, and the system $Ax=b$ is consistent, then $Ax=b$ has a unique solution.
Correct Mark 1.00 out of	Select one:
1.00	a. True
	● b. False ✓
	The correct answer is: False
Question 7	
Correct	$\begin{pmatrix} 1 & 2 & -1 & & 0 \\ 2 & 2 & 1 & & -1 \end{pmatrix}$ then the system has only and call tion if
Mark 1.00 out of	If $(A b)=egin{pmatrix} 1&2&-1& &0\\ 2&3&1& &-1\\ 1&1&lpha& η \end{pmatrix}$, then the system has only one solution if
1.00	$(1 1 \alpha \beta)$
	Select one:
	${}^{\circledast}$ a. $lpha eq 2$ and eta any number
	$^{\odot}~$ b. $lpha eq 2$ and $eta eq -1$
	$^{\odot}$ c. $lpha=2$ and $eta=-1$
	$^{\odot}~$ d. $lpha=2$ and $eta eq-1$
	The correct answer is: $lpha eq 2$ and eta any number
Question 8 Correct	If A is a nonsingular $3 imes 3$ -matrix, then the reduced row echelon form of A has no row of zeros.
Mark 1.00 out of	Select one:
1.00	a. False
	● b. True ✓
	The correct answer is: True
Question 9 Correct	If ${\cal E}$ is an elementary matrix then one of the following statements is not true
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. E^{-1} is an elementary matrix.
	$^{\odot}$ b. E is nonsingular.
	$^{\circ}$ c. E^{T} is an elementary matrix.
	• d. $E + E^T$ is an elementary matrix.

The correct answer is: $\boldsymbol{E} + \boldsymbol{E}^T$ is an elementary matrix.

Question 10	If A is a $3 imes 3$ matrix with $\det(A)=-2$. Then $\det(adj(A))=$
Correct	Select one:
Mark 1.00 out of 1.00	 a. 4.
	 ✓ u ✓
	◎ b. −4.
	◎ c. −8.
	○ d. 8.
	The correct answer is: 4.
Question 11 Correct	If A is singular and B is nonsingular $n imes n$ -matrices, then AB is
Mark 1.00 out of	Select one:
1.00	● a. singular
	b. may or may not be singular
	C. nonsingular
	The correct answer is: singular
Question 12 Correct Mark 1.00 out of 1.00	If $(A b)=egin{pmatrix} 1&1&2& &4\\ 2&-1&2& &6\\ 1&1&2& &5 \end{pmatrix}$, then the system $Ax=b$ is inconsistent
	Select one:
	In a. True
	b. False
	The correct answer is: True
Question 13 Correct	If A is a singular $n imes n$ -matrix, $b\in \mathbb{R}^n$, then the system $Ax=b$
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. has either no solution or an infinite number of solutions 🗸
	b. has infinitely many solutions.
	c. has a unique solution
	d. is inconsistent
	The correct answer is: has either no solution or an infinite number of solutions
Question 14 Correct	If A is symmetric and skew symmetric then $A=0.$ (A is skew symmetric if $A=-A^T$).
	If A is symmetric and skew symmetric then $A = 0$. (A is skew symmetric if $A = -A^T$). Select one: • a. True \checkmark

Question 15 Correct	If $A=LU$ is the LU -factorization of a matrix A , and A is singular, then
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. L and U are both singular
	It is singular and L is nonsigular
	\bigcirc c. L and U are both nonsingular
	• d. L is singular and U is nonsigular
	The correct answer is: U is singular and L is nonsigular
Question 16 Correct	If A and B are singular matrices, then $A+B$ is also singular.
Mark 1.00 out of	Select one:
1.00	● a. False
	b. True
	The correct answer is: False
Question 17 Correct	If A is a singular matrix, then A can be written as a product of elementary matrices.
Mark 1.00 out of	Select one:
1.00	● a. False
	b. True
	The correct answer is: False
Question 18 Correct Mark 1.00 out of	Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (4,4,5)^T$. Then the third column of the matrix A is
1.00	Select one:
	• a. $(1, 1, 4)^T$.
	• b. $(4, -1, 1)^T$.
	\circ c. $(-1, -1, -4)^T$.
	\bigcirc d. $(-1, -2, 1)^T$.
	The correct answer is: $(1,1,4)^T$.
Question 19 Correct	Let A be a $3 imes 4$ matrix which has a row of zeros, and let B be a $4 imes 4$ matrix , then AB has a row of zeros.
Mark 1.00 out of	Select one:
1.00	● a. True ✓
	b. False

The correct answer is: True

Correct Mark 1.00 out of 1.00

Let
$$A$$
 be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then

Select one:

- ${igledown}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k$
- igodot b. A is the zero matrix
- ${}^{igodoldsymbol{\circ}}$ c. The system Ax=0 has only one solution
- $^{\odot}\,$ d. A is singular.
 - ✓ .

The correct answer is: \boldsymbol{A} is singular.

Question 21

Correct Mark 1.00 out of 1.00

If ${\boldsymbol E}$ is an elementary matrix of type III, then ${\boldsymbol E}^T$ is

Select one:

- $\, \bigcirc \,$ a. an elementary matrix of type I
- $\,\bigcirc\,$ b. an elementary matrix of type II
- $^{\odot}\,$ c. not an elementary matrix
- $^{\odot}\,$ d. an elementary matrix of type III 🗸

The correct answer is: an elementary matrix of type III

Question 22

Correct Mark 1.00 out of 1.00

	(1	-1	1	
A =	3	-2	2	, then $\det(A) =$
	$\setminus -2$	-1	3 /	1

Select one:

Let

۲	a. 2
	✓
	b. 3
	c. 5
	d. 0

The correct answer is: $2 \ \ \,$

Correct Mark 1.00 out of 1.00

If the row echelon form of
$$(A|b)$$
 is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 0 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• c. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• d. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$

The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha \end{pmatrix}$

Question 24

Correct Mark 1.00 out of 1.00 If A, B are n imes n-skew-symmetric matrices(A is skew symmetric if $A^T = -A$), then AB + BA is symmetric

- Select one:
- a. True ✓● b. False

The correct answer is: True

Question 25

Correct Mark 1.00 out of 1.00 Let A be a 4×3 -matrix with $a_2 - a_3 = 0$. If $b = a_1 + a_2 + a_3$, where a_j is the jth column of A, then the system Ax = b will have infinitely many solutions.

- Select one:
- a. False
- 💿 b. True 🗸

The correct answer is: True

Correct Mark 1.00 out of 1.00

```
If A is a 3 × 3-matrix and the system Ax = \begin{pmatrix} 5\\1\\3 \end{pmatrix} has a unique solution, then the system Ax = \begin{pmatrix} 0\\0\\0 \end{pmatrix}
```

Select one:

- a. is inconsistent
- b. has only the zero solution.
- c. has infinitely many solutions

The correct answer is: has only the zero solution.

Question 27

Incorrect Mark 0.00 out of 1.00 If AB=0, where A and B are n imes n nonzero matrices. Then

Select one:

×

- \bigcirc b. both A, B are singular.
- \bigcirc c. both A, B are nonsingular.
- ${}^{\bigcirc}\,$ d. either A=0 or B=0

The correct answer is: both ${\cal A}, {\cal B}$ are singular.

Question 28

Correct Mark 1.00 out of 1.00 If x_0 is a solution of the nonhomogeneous system Ax = b and x_1 is a solution of the homogeneous system Ax = 0. Then $x_1 + x_0$ is a solution of

Select one:

Select one:

- \bigcirc a. the system Ax=0
- ${}^{igodold }$ b. the system Ax=2b
- $^{igodoldsymbol{ imes}}$ c. the system Ax=Ab
- ullet d. the system Ax=b

The correct answer is: the system Ax = b

Question 29

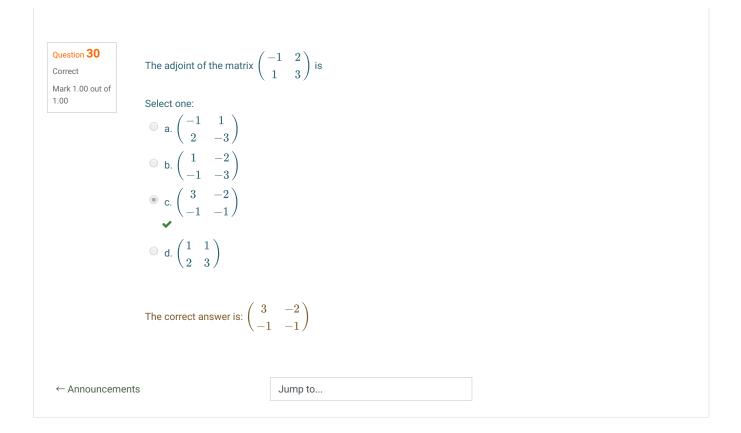
Correct Mark 1.00 out of 1.00

- $^{igodoldsymbol{\circ}}$ a. The system Ax=b is inconsistent
- ightarrow b. The system Ax=b has only two solutions
- ullet c. The system Ax=b has a unique solution

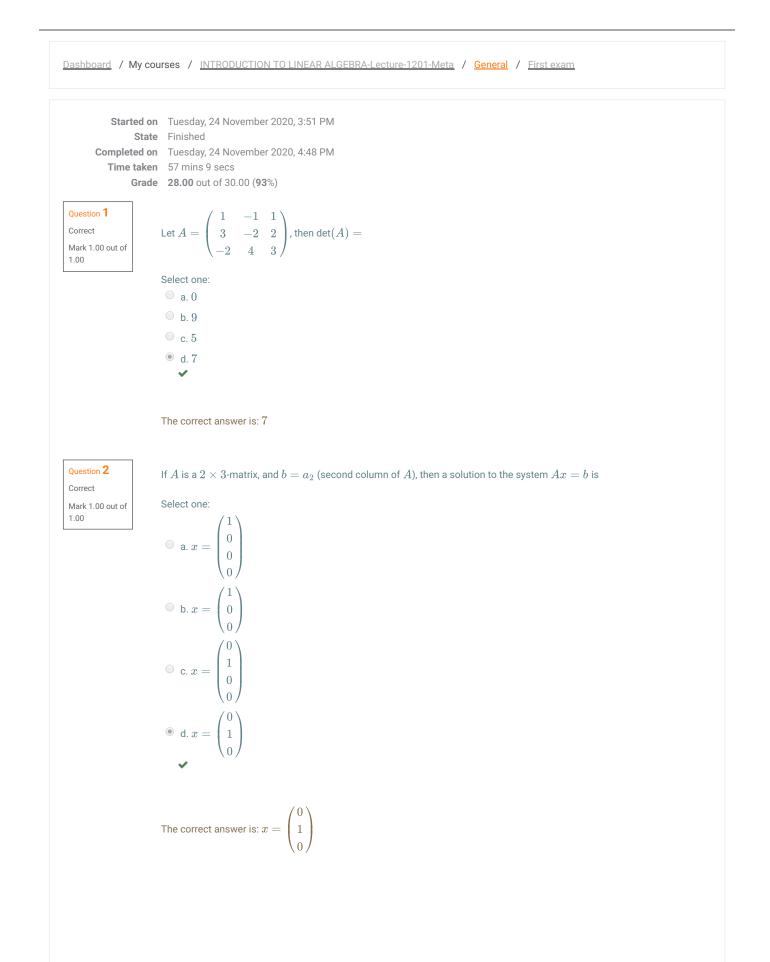
If A is a nonsingular n imes n matrix, $b \in \mathbb{R}^n$, then

ightarrow d. The system Ax=b has infinitely many solutions

The correct answer is: The system Ax = b has a unique solution



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Correct Mark 1.00 out of 1.00

If A is a 2 imes 2 matrix with $\det(A) = -2$. Then $\det(adj(A)) =$

Sele	ct one:
	a. 2.
۲	b. −2.
	~
	c. −4.
	d. 4.

The correct answer is: -2.

Question 4

Correct Mark 1.00 out of 1.00

If A, B, C are n imes n nonsingular matrices, then $A^2 - B^2 = (A+B)(A-B).$

Select one:

a. False b. True

The correct answer is: False

Question 5 Correct Mark 1.00 out of 1.00

If \boldsymbol{A} is a singular matrix, then \boldsymbol{A} can be written as a product of elementary matrices.

Sele	ct	one:	
۲	a.	False	~

b. True

The correct answer is: False

Question 6

Correct Mark 1.00 out of 1.00

The adjoint of the matrix $\begin{pmatrix} 5 & 2 \\ -1 & 6 \end{pmatrix}$ is

Select one:

• a.
$$\begin{pmatrix} 5 & -1 \\ 2 & 6 \end{pmatrix}$$

• b. $\begin{pmatrix} 6 & -2 \\ 1 & 5 \end{pmatrix}$
• c. $\begin{pmatrix} -5 & -1 \\ 2 & -6 \end{pmatrix}$
• d. $\begin{pmatrix} -6 & 2 \\ -1 & -5 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 6 & -2 \\ 1 & 5 \end{pmatrix}$

Question 7 Correct Mark 1.00 out of 1.00	If A and B are $n \times n$ matrices such that $Ax \neq Bx$ for all nonzero $x \in \mathbb{R}^n$. Then Select one: a. A and B are singular. b. $A - B$ is singular. c. A and B are nonsingular. d. $A - B$ is nonsingular.
	The correct answer is: $A-B$ is nonsingular.
Question 8 Incorrect Mark 0.00 out of 1.00	If y , z are solutions to $Ax = b$, then $\frac{1}{3}y + \frac{3}{4}z$ is a solution of the system $Ax = b$. Select one: a. False b. True X
	The correct answer is: False
Question 9 Correct Mark 1.00 out of 1.00	Let A be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then
	Select one: a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A = E_1 E_2 \cdots E_k$ b. The system $Ax = 0$ has only one solution c. A is singular. d. A is the zero matrix
	The correct answer is: A is singular.
Question 10 Correct Mark 1.00 out of 1.00	If A is symmetric and skew symmetric then $A = 0$. (A is skew symmetric if $A = -A^T$). Select one: \bigcirc a. False \circledast b. True \checkmark
	The correct answer is: True

Question **11** Correct Mark 1.00 out of

1.00

An n imes n matrix A is invertible if and only if

ut of Select one:

a. there exists a matrix B such that AB = I

• b. A = I• c. |A| = 0

 ${igledown}$ d. Ax=0 has a nonzero solution

The correct answer is: there exists a matrix \boldsymbol{B} such that $\boldsymbol{A}\boldsymbol{B}=\boldsymbol{I}$

Question 12 Correct Mark 1.00 out of 1.00

If A,B,C are n imes n-matrices with A nonsigular and AB=AC , then B=C

Select one:

a. Falseb. True

The correct answer is: True

Question **13** Correct Mark 1.00 out of 1.00 In the square linear system Ax = b, if A is singular and b is not a linear combination of the columns of A then the system

Select one:

- $^{\odot}\,$ a. has a unique solution
- b. has infinitely many solutions
- c. can not tell
- d. has no solution

The correct answer is: has no solution

Question 14 Correct Mark 1.00 out of

1.00

Any two n imes n-singular matrices are row equivalent.

Select one: a. False

b. True

The correct answer is: False

Question **15** Correct Mark 1.00 out of 1.00

If A is a singular n imes n-matrix, $b \in \mathbb{R}^n$, then the system Ax = b

Select one:

- a. is inconsistent
- b. has a unique solution
- ${\ensuremath{\, \circ }}$ c. has either no solution or an infinite number of solutions ${\ensuremath{\, \cdot }}$
- d. has infinitely many solutions.

The correct answer is: has either no solution or an infinite number of solutions

Question **16** Correct Mark 1.00 out of 1.00

Let A be a 3×4 matrix which has a row of zeros, and let B be a 4×4 matrix , then AB has a row of zeros.

Select one: ● a. True ✔

🔍 b. False

The correct answer is: True

Question **17** Correct Mark 1.00 out of 1.00

If ${\boldsymbol E}$ is an elementary matrix of type III, then ${\boldsymbol E}^T$ is

Select one:

- $\,\bigcirc\,$ a. an elementary matrix of type II
- b. an elementary matrix of type I
- $^{\odot}\,$ c. an elementary matrix of type III 🗸
- d. not an elementary matrix

The correct answer is: an elementary matrix of type III

Question 18
Correct
Mark 1.00 out of

1.00

	(1)	0	-2	-1	-2	
If the row echelon form of $\left(A b ight)$ is	0	1	1	-1	-1	then the general form of the solutions is given by
	0/	0	1	1	0 /	

Select one:

• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• c. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ -\alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$
• d. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$

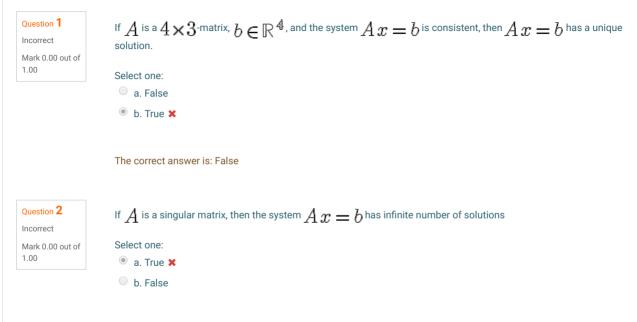
The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha\end{pmatrix}$

If $(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 0 & 3 & 2 & | & 1 \end{pmatrix}$ is the augmented matrix of the system Ax = b then the system has no solution Question 19 Incorrect Mark 0.00 out of 1.00 Select one: 🍥 a. False 🗙 b. True The correct answer is: True Question 20 If $(A|b)=egin{pmatrix} 1&2&-1&|&0\\ 2&3&1&|&-1\\ 1&1&lpha&|&eta \end{pmatrix}$, then the system is inconsistent if Correct Mark 1.00 out of 1.00 Select one: \bigcirc a. lpha
eq 2 and eta
eq -1 \bigcirc b. lpha
eq 2 and eta any number \odot c. lpha=2 and eta=-1 $^{\odot}\,$ d. lpha=2 and eta
eq-1The correct answer is: lpha=2 and eta
eq-1Question 21 Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3 imes 3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (5,2,4)^T$. Then the third column of the matrix A is Correct Mark 1.00 out of 1.00 Select one: • a. $(-2, 1, -3)^T$ • b. $(1, -1, -4)^T$. • c. $(2, -1, 3)^T$. • d. $(1, -1, 4)^T$. The correct answer is: $(2, -1, 3)^T$. Question 22 If A is a nonsingular n imes n matrix, then Correct Select one: Mark 1.00 out of 1.00 ${old o}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k.$ ~ • b. det(A) = 1 \bigcirc c. There is a singular matrix C such that A = CI. \bigcirc d. The system Ax = 0 has a nontrivial (nonzero) solution. The correct answer is: There are elementary matrices E_1, E_2, \dots, E_k such that $A = E_1 E_2 \dots E_k$.

Question 23 Correct	If A is a symmetric $n imes n$ -matrix and P any $n imes n$ -matrix, then PAP^T is
Mark 1.00 out of	Select one:
1.00	🍥 a. symmetric ✔
	b. not defined
	c. singular
	 d. not symmetric
	The correct answer is: symmetric
Question 24 Correct	If A is an $n imes n$ matrix and the system $Ax=b$ has infinitely many solutions, then
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. A is symmetric
	$^{\odot}$ b. A has a row of zeros
	 ● c. A singular ✓
	$^{\odot}$ d. A is nonsingular
	The correct answer is: A singular
Question 25 Correct	If A is a $3 imes 3$ matrix such that $det(A)=2$, then $\det(3A)=6$
Mark 1.00 out of	Select one:
1.00	🍥 a. False 🗸
	b. True
	The correct answer is: False
Question 26 Correct	If A,B,C are $3 imes 3$ -matrices, $\det(A)=9, \det(B)=2, \det(C)=3$, then $\det(3C^TBA^{-1})=$
Mark 1.00 out of	Select one:
1.00	○ a. 6
	• b. 18
	• c. 16
	• d. 2
	The correct answer is: 18
Question 27 Correct	If A and B are singular matrices, then $A+B$ is also singular.
Mark 1.00 out of	Select one: ● a. False ✔
	• b. True

Question 28 Correct	In the $n imes n$ -linear system $Ax = b$, if A is singular and b is a linear combination of the columns of A then the system has
Mark 1.00 out of	1192
1.00	Select one:
	a. no solution
	b. a unique solution
	e. infinitely many solutions ✓
	d. exactly two solutions
	The correct answer is: infinitely many solutions
Question 29 Correct	If A is a $4 imes 3$ -matrix, $b\in \mathbb{R}^4$, and the system $Ax=b$ is consistent, then $Ax=b$ has a unique solution.
Mark 1.00 out of	Select one:
1.00	In a. False
	b. True
	The correct answer is: False
Question 30 Correct Mark 1.00 out of 1.00	If A is a 3×3 -matrix and the system $Ax = \begin{pmatrix} 5 \\ 1 \\ 3 \end{pmatrix}$ has a unique solution, then the system $Ax = \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$
	Select one:
	a. has infinitely many solutions
	● b. has only the zero solution. ✓
	◎ c. is inconsistent
	The correct answer is: has only the zero solution.
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Question 4

Correct Mark 1.00 out of 1.00

If
$$(A|b) = \begin{pmatrix} 1 & 2 & -1 & | & 0 \\ 2 & 3 & 1 & | & -1 \\ 1 & 1 & \alpha & | & \beta \end{pmatrix}$$
, then the system has infinite number of solutions if

Select one:

• a. $\alpha \neq 2$ and β any number • b. $\alpha = 2$ and $\beta \neq -1$ • c. $\alpha = 2$ and $\beta = -1$ • d. $\alpha \neq 2$ and $\beta \neq -1$

The correct answer is: lpha=2 and eta=-1

Question 5 Correct Mark 1.00 out of 1.00 Let $A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&1&3 \end{pmatrix}$, then $\det(A)=$

a. 4
b. 0
c. 8
d. 1

Select one:

The correct answer is: 4

Question **6** Correct

Mark 1.00 out of 1.00

> Select one: a. False

b. True

The correct answer is: True

Question 7

Incorrect Mark 0.00 out of 1.00 If a matrix B is obtained from A by multiplying a row of A by a real number c, then |A| = c|B|.

If $(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 1 & 1 & 2 & | & 5 \end{pmatrix}$, then the system Ax = b is inconsistent

Select one: a. False

b. True ×

Question 8	In the square linear system $Ax=b$, if A is singular and b is not a linear combination of the columns of A then the
ncorrect	system
Mark 0.00 out of 1.00	Select one:
	a. can not tell
	 b. has a unique solution
	c. has infinitely many solutions ×
	 d. has no solution
	The correct answer is: has no solution
Question 9	If E is an elementary matrix of type III, then E^T is
Mark 1.00 out of	Select one:
1.00	a. not an elementary matrix
	● b. an elementary matrix of type III
	c. an elementary matrix of type I
	 d. an elementary matrix of type II
	The correct answer is: an elementary matrix of type III
Question 10 Correct	If $AB=0$, where A and B are $n imes n$ nonzero matrices. Then
Mark 1.00 out of	Select one:
1.00	${}^{\odot}$ a. both A,B are nonsingular.
	Is both A, B are singular. Image:
	$^{\odot}$ c. either A or B is singular
	$^{\odot}$ d. either $A=0$ or $B=0$
	The correct answer is: both A,B are singular.
Question 11	If A,B are $n imes n$ -skew-symmetric matrices(A is skew symmetric if $A^T=-A$), then $AB+BA$ is symmetric
Correct Mark 1.00 out of	Select one:
.00	• a. False
	● b. True
	The correct answer is: True
Question 12	If A is a $3 imes 3$ matrix such that $det(A)=2$, then $\det(3A)=6$
Mark 1.00 out of	Select one: a. True
	● b. False

Correct Mark 1.00 out of 1.00 The adjoint of the matrix $\begin{pmatrix} 2 & 5 \\ 1 & 3 \end{pmatrix}$ is

Select one:

.

a.
$$\begin{pmatrix} -5 & 3\\ 2 & -1 \end{pmatrix}$$

b.
$$\begin{pmatrix} -3 & 5\\ 1 & -2 \end{pmatrix}$$

c.
$$\begin{pmatrix} 3 & -5\\ -1 & 2 \end{pmatrix}$$

c.
$$\begin{pmatrix} -2 & 1\\ 5 & -3 \end{pmatrix}$$

The correct answer is: $\begin{pmatrix} 3 & -5 \\ -1 & 2 \end{pmatrix}$

Question 14

Correct Mark 1.00 out of 1.00 Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (2,1,3)^T$. Then the third column of the matrix A is

Select one:
a.
$$(1, 1, 0)^T$$
.
b. $(-1, -2, 2)^T$.
c. $(4, -1, 1)^T$.
d. $(-1, -1, 2)^T$.

The correct answer is: $(-1, -2, 2)^T$.

Question **15** Correct Mark 1.00 out of 1.00 $(0,0,0)^T$ is a linear combination of the vectors $(1,2,3)^T, (1,4,1)^T, (2,3,1)^T$

Select one: ● a. True ✔

b. False

The correct answer is: True

Question 16

Correct Mark 1.00 out of 1.00 Let A be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then

Select one:

- ${}^{igodoldsymbol{\circ}}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k$
- $^{\odot}\,$ b. A is singular.
 - ✓ _
- $^{igodoldsymbol{\circ}}$ c. A is the zero matrix
- ${}^{igodoldsymbol{\circle}}$ d. The system Ax=0 has only one solution

A be a $3 imes 4$ matrix which has a row of zeros, and let B be a $4 imes 4$ matrix , then AB has a row of zeros.
ect one:
a. False 🗙
b. True
e correct answer is: True
A is a $4 imes 3$ matrix such that $Ax=0$ has only the zero solution, and $b=egin{pmatrix}1\\3\\2\\0\end{pmatrix}$, then the system $Ax=b$
ect one:
a. is either inconsistent or has an infinite number of solutions
b. is inconsistent
c. is either inconsistent or has one solution
d. has exactly one solution 🗙
e correct answer is: is either inconsistent or has one solution
x_0 is a solution of the nonhomogeneous system $Ax=b$ and x_1 is a solution of the homogeneous system $Ax=0.$
ect one:
a. the system $Ax=0$
b. the system $Ax=2b$
c. the system $Ax = Ab$
d. the system $Ax = b$
e correct answer is: the system $Ax=b$
A,B are two square nonzero matrices and $AB=0$ then both A and B are singular
ect one:
a. False
b. True 🗸
e correct answer is: True

Question 21 Incorrect

Question 21 Incorrect	If A is a $3 imes 3$ matrix with $\det(A)=-1.$ Then $\det(adj(A))=$
Mark 0.00 out of	Select one:
1.00	● a1.
	×
	● b. 3.
	○ c. −3.
	d. 1.
	The correct answer is: 1.
Question 22 Correct	If A is a $3 imes 5$ matrix, then the system $Ax=0$
Mark 1.00 out of	Select one:
1.00	a. has no solution.
	b. has only the zero solution
	🍭 c. has infinitely many solutions ✔
	d. is inconsistent
	The correct answer is: has infinitely many solutions
Question 23 Correct	If A is a nonsingular $n imes n$ matrix, $b\in \mathbb{R}^n$, then
Mark 1.00 out of	Select one:
1.00	$^{\bigcirc}$ a. The system $Ax=b$ is inconsistent
	igodoldoldoldoldoldoldoldoldoldoldoldoldol
	$^{igodold m}$ c. The system $Ax=b$ has only two solutions
	 d. The system $Ax = b$ has a unique solution
	The correct answer is: The system $Ax=b$ has a unique solution

Question 24

Correct Mark 1.00 out of 1.00

If A, B are n imes n symmetric matrices then AB is symmetric.

Sele	ect	one
۲	a.	Fals

Sele	ect one:
۲	a. False 🗸
	b. True

The correct answer is: False

Correct Mark 1.00 out of 1.00

Select one: a. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}$ b. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$ c. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$ d. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$

The correct answer is: $x = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$

• a. A - B is nonsingular. • b. A and B are nonsingular.

C. A - B is singular. d. A and B are singular.

Select one:

×

Question 26 Incorrect Mark 0.00 out of 1.00

If A and B are n imes n matrices such that Ax
eq Bx for all nonzero $x\in \mathbb{R}^n.$ Then

Question 27

If A is a nonsingular n imes n matrix, then

The correct answer is: A-B is nonsingular.

Mark 1.00 out of 1.00

Select one: $\ \ \, \odot$ a. There are elementary matrices E_1,E_2,\cdots,E_k such that $A=E_1E_2\cdots E_k.$

- ✓
- $\hfill {\hfill 0}$ b. There is a singular matrix C such that A=CI.
- ${}^{igodold }$ c. The system Ax=0 has a nontrivial (nonzero) solution.

 \bigcirc d. det(A) = 1

The correct answer is: There are elementary matrices E_1, E_2, \cdots, E_k such that $A = E_1 E_2 \cdots E_k$.

Question 28	Any elementary matrix is nonsigular
Correct	
Mark 1.00 out of 1.00	Select one:
1.00	a. False
	● b. True ✓
	The correct answer is: True
Question 29 Correct	If A is singular and B is nonsingular $n imes n$ -matrices, then AB is
Mark 1.00 out of	Select one:
1.00	● a. singular
	b. may or may not be singular
	C. nonsingular
	The correct answer is: singular
Question 30 Correct	In the $n imes n$ -linear system $Ax=b$, if A is singular and b is a linear combination of the columns of A then the system has
Mark 1.00 out of 1.00	Select one:
Mark 1.00 out of 1.00	Select one:
	a. exactly two solutions
	 a. exactly two solutions b. no solution
	 a. exactly two solutions b. no solution c. a unique solution
	 a. exactly two solutions b. no solution
	 a. exactly two solutions b. no solution c. a unique solution
	 a. exactly two solutions b. no solution c. a unique solution d. infinitely many solutions

Data retention summary Switch to the standard theme

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201-Meta / General / First exam

Started on Tuesday, 24 November 2020, 4:00 PM State Finished Completed on Tuesday, 24 November 2020, 5:07 PM Time taken 1 hour 7 mins Grade 24.00 out of 30.00 (80%) Question 1 If A, B, C are 3×3 -matrices, $\det(A) = 9, \det(B) = 2, \det(C) = 3$, then $\det(3C^TBA^{-1}) =$ Correct Select one: Mark 1.00 out of 1.00 🔍 a. 6 b. 16 • c. 18 \checkmark \bigcirc d. 2 The correct answer is: 18 Question 2 Let $A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&-2&3 \end{pmatrix}$, then $\det(A)=$ Correct Mark 1.00 out of 1.00 Select one: ● a.1 \checkmark • b. 9 • c. 7 d. 0 The correct answer is: 1 The adjoint of the matrix $egin{pmatrix} 4 & 1 \\ 2 & -1 \end{pmatrix}$ is Question 3 Correct Mark 1.00 out of 1.00 Select one: • a. $\begin{pmatrix} -1 & -1 \\ -2 & 4 \end{pmatrix}$ \bigcirc b. $\begin{pmatrix} -1 & -2 \\ -3 & -5 \end{pmatrix}$ \odot c. $\begin{pmatrix} 4 & -1 \\ -2 & -1 \end{pmatrix}$ \bigcirc d. $\begin{pmatrix} -1 & 2 \\ 1 & -4 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} -1 & -1 \\ -2 & 4 \end{pmatrix}$

Correct Mark 1.00 out of 1.00

$$\mathsf{lf}A = \begin{pmatrix} 1 & 4 & -1 \\ 2 & 9 & 2 \\ -3 & -12 & 3 \end{pmatrix}$$

Select one:

• a.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ -3 & 0 & 1 \end{pmatrix}$$
•
• b. $L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ -3 & 0 & 0 \end{pmatrix}$
• c. $L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ 3 & 0 & 1 \end{pmatrix}$
• d. $L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ 3 & 0 & 0 \end{pmatrix}$

The correct answer is: $L=\begin{pmatrix} 1&0&0\\ 2&1&0\\ -3&0&1 \end{pmatrix}$

Question 5 Correct Mark 1.00 out of

1.00

Any two n imes n-singular matrices are row equivalent.

Select one: a. True

🍥 b. False 🗸

The correct answer is: False

Question **6** Correct Mark 1.00 out of

1.00

If \boldsymbol{A} is a nonsingular and symmetric matrix, then

Select one:

 ${}^{\bigcirc}\,$ a. A^{-1} is singular and symmetric

 $^{\odot}\,$ b. A^{-1} is singular and not symmetric

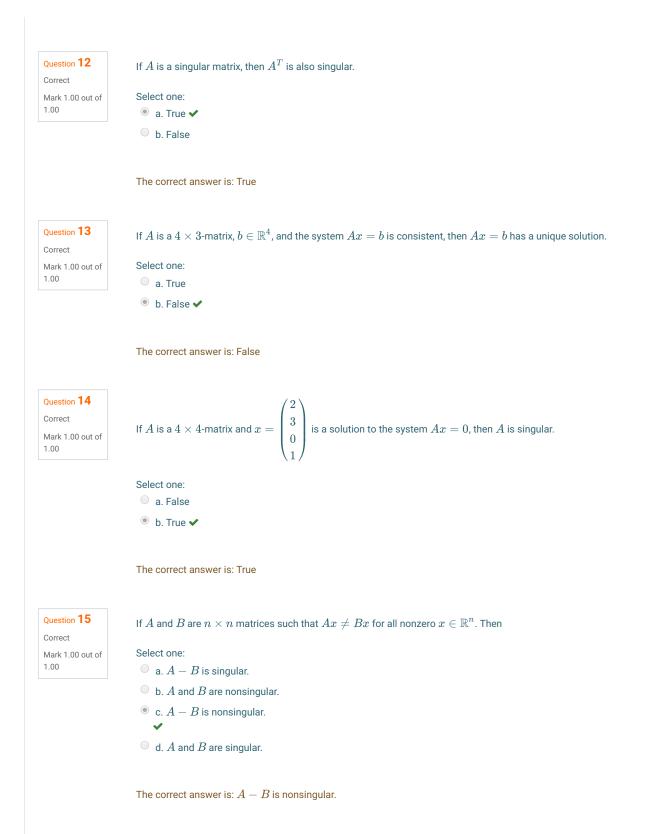
 ${\ensuremath{\,^{\circ}}}$ c. A^{-1} is nonsingular and symmetric

~

 $^{igodoldsymbol{\circ}}$ d. A^{-1} is nonsingular and not symmetric

The correct answer is: A^{-1} is nonsingular and symmetric

Question 7 Correct	If $AB=AC$, and $ A eq 0$, then
Mark 1.00 out of	Select one:
1.00	$^{igodoldsymbol{\circ}}$ a. $B eq C$
	$^{igodoldsymbol{ imes}}$ b. $A=0$
	$^{\odot}$ c. $A=C$
	• d. $B = C$.
	✓
	The correct answer is: $B = C$.
Question 8	If A,B are $n imes n$ symmetric matrices then AB is symmetric.
Incorrect Mark 0.00 out of	Select one:
1.00	 a. False
	🍥 b. True 🗙
	The correct answer is: False
Question 9 Correct	If y , z are solutions to $Ax=b$, then $y+z$ is a solution of the system $Ax=0.$
Mark 1.00 out of	Select one:
1.00	
	O b. True
	The correct answer is: False
Question 10 Correct Mark 1.00 out of 1.00	Let $A=egin{pmatrix} 1&1&0\ 1&a&1\ 1&1&2 \end{pmatrix}$. the value(s) of a that make A nonsingular
	Select one:
	$^{\bigcirc}$ a. $a eq rac{1}{2}$
	\bigcirc b. $a = 1$
	• c. $a = \frac{1}{2}$
	\checkmark
	The correct answer is: $a eq 1$
Question 11	If A, B are $n imes n$ -skew-symmetric matrices(A is skew symmetric if $A^T = -A$), then $AB + BA$ is symmetric
Incorrect	
Mark 0.00 out of	Select one:
1.00	a. True
	b. False ×



Question **16** Correct

Mark 1.00 out of 1.00

If
$$A = \begin{pmatrix} 1 & -2 & 5 \\ 4 & -11 & 8 \\ -3 & 3 & -27 \end{pmatrix}$$
 and $b = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$, then the system $Ax = b$ is consistent if and only if Select one:

a. $7b_1 - b_2 + b_3 \neq 1$
b. $7b_1 - b_2 + b_3 \neq 0$
c. $7b_1 - b_2 + b_3 = 1$
d. $7b_1 - b_2 + b_3 = 0$

The correct answer is: $7b_1-b_2+b_3=0$

Question **17** Correct Mark 1.00 out of 1.00

Any two n imes n-nonsingular matrices are row equivalent.

Select one:

a. False

~

🖲 b. True 🗸

The correct answer is: True

Question **18** Correct Mark 1.00 out of 1.00

A square matrix A is nonsingular iff its RREF (reduced row echelon form) is the identity matrix.

Select one: ◉ a. True ✔

b. False

Correct Mark 1.00 out of 1.00

If the row echelon form of
$$(A|b)$$
 is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 0 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

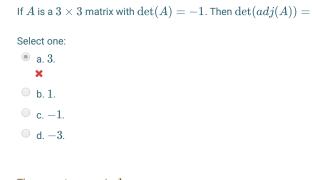
• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$
• c. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \\ \alpha \end{pmatrix}$
• d. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$

The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha \end{pmatrix}$

Question 20

Incorrect Mark 0.00 out of 1.00



The correct answer is: 1.

Question 21 Correct Mark 1.00 out of 1.00

If A is a 3 imes 3 matrix such that det(A)=2, then $\det(3A)=6$

Select one: a. True

● b. False ✓

The correct answer is: False

Question 22 If A is a 3 imes 5 matrix, then the system Ax=0Correct Select one: Mark 1.00 out of 1.00 a. is inconsistent b. has infinitely many solutions c. has no solution. d. has only the zero solution The correct answer is: has infinitely many solutions Question 23 Let U be an n imes n-matrix in reduced row echelon form and U
eq I , then Correct Select one: Mark 1.00 out of 1.00 • a. det(U) = 1 ${}^{igodold }$ b. The system Ux=0 has only the zero solution. \bigcirc c. U is the zero matrix ${\ensuremath{\, extstyle \, }}$ d. The system Ux=0 has infinitely many solutions ~

The correct answer is: The system Ux=0 has infinitely many solutions

Question 24

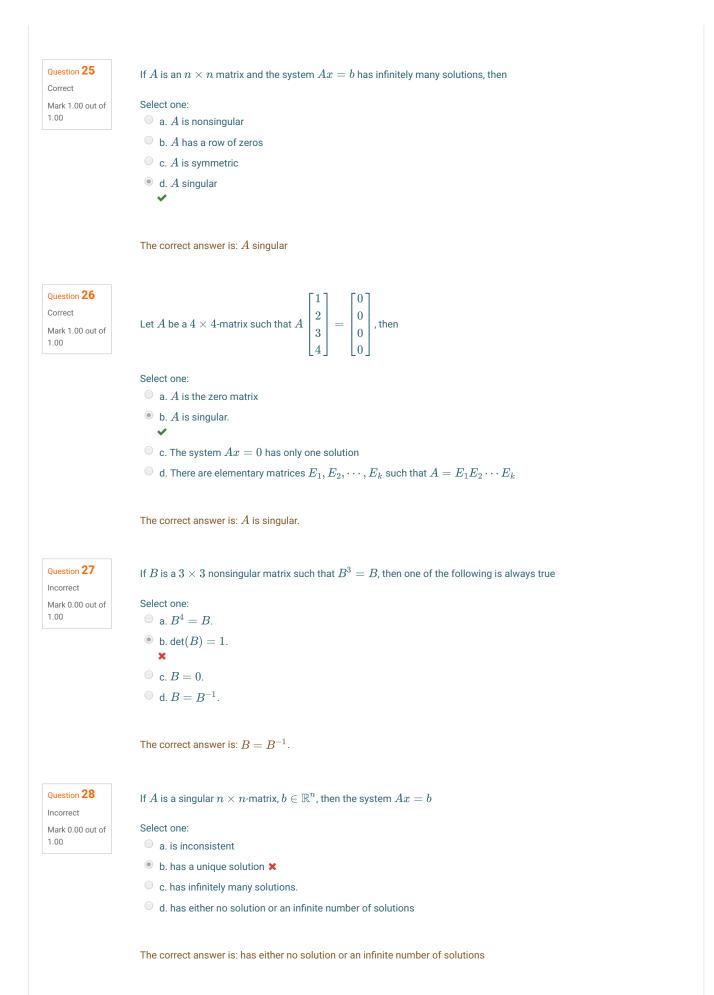
Mark 0.00 out of 1.00

Let A be a 3×3 -matrix with $a_1 = a_2$. If $b = a_2 - a_3$, where a_1, a_2, a_3 ar the columns of A, then a solution to the system Ax = b is

Select one:
a.
$$x = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$$

b. $x = \begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix}$
c. $x = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}$
d. $x = \begin{pmatrix} 0 \\ 0 \\ 2 \end{pmatrix}$

The correct answer is: $x = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$





Correct Mark 1.00 out of 1.00

Let
$$A=egin{pmatrix} 1&2&3&0\\ 1&1&2&1\\ 2&3&5&1 \end{pmatrix}$$
 and $b=egin{pmatrix} 2\\ 1\\ 4 \end{pmatrix}$. The system $Ax=b$

Select one:

- a. has exactly three solutions.
- b. has a unique solution
- $^{\odot}\,$ c. is inconsistent \checkmark
- d. has infinitely many solutions

The correct answer is: is inconsistent

Question **30** Correct Mark 1.00 out of 1.00

Let $(1, 2, 0)^T$ and $(2, 1, 1)^T$ be the first two columns of a 3×3 matrix A and $(1, 1, 1)^T$ be a solution of the system $Ax = (2, 1, -1)^T$. Then the third column of the matrix A is

Select one: a. $(1, 2, 2)^T$. b. $(-1, -2, -2)^T$. c. $(4, -1, 1)^T$.

• d.
$$(1, 1, 0)^T$$
.

The correct answer is: $(-1, -2, -2)^T$.

← Announcements

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Data retention summary Switch to the standard theme

	My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201 - 4 / General / Quiz 1
Starte	d on Monday, 19 October 2020, 10:01 AM
S	itate Finished
Complete	d on Monday, 19 October 2020, 10:31 AM
	iken 30 mins 1 sec
	arks 23.00/25.00
Gı	rade 9.20 out of 10.00 (92%)
Question 1 Correct	If a matrix A is row equivalent to I , then A is nonsingular.
Mark 2.00 out	Select one:
of 2.00	💿 a. True 🗸
	O b. False
Question 2 Correct	If a matrix A is nonsingular, then the matrix A^T is also nonsingular.
Mark 2.00 out	Select one:
of 2.00	💿 a. True 🗸
	O b. False
Question 3	
Correct	If A and B are $n imes n$ nonsingular matrices, then AB is also nonsingular.
Mark 2.00 out	Select one:
of 2.00	a. True
	O b. False
Question 4	If $A = b$ is an overdetermined and consistent linear system, then it must have infinitely many solutions
Correct	If $Ax=b$ is an overdetermined and consistent linear system, then it must have infinitely many solutions.
Mark 2.00 out	Select one:
of 2.00	O a. True
	b. False
Question 5	$\begin{bmatrix} 1 \end{bmatrix} \begin{bmatrix} 0 \end{bmatrix}$
Correct	Let A be a $3 imes 3$ matrix and suppose that $A egin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} = egin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$. Then
Mark 2.00 out of 2.00	

Mark 2.00 out of 2.00

Select one:

- \odot a. Ax=0< has infinitely many solutions \checkmark
- ${igle}$ b. $Ax=(1,0,0)^T$ has infinitely many solutions

 \bigcirc c. A is nonsingular

d. None of the above

Question **6**

Correct Mark 2.00 out of 2.00

If a matrix is in row echelon form, then it is also in reduced row echelon form.

A b Ealco

Select one:

🔘 a. True

Question 7Correct

Mark 3.00 out of 3.00

If $(A|b) = \begin{bmatrix} 1 & 0 & 2 & | & 1 \\ -1 & 1 & -1 & | & 0 \\ -1 & 0 & \alpha & | & \beta \end{bmatrix}$ is the augmented matrix of the system Ax = b. Answer the following questions.

The system has no solution if

 $\odot lpha = -2$ and eta
eq -1 🗸 $\odot lpha = -2$ and eta = -1 $\odot lpha
eq -2$ and eta
eq -1 $\odot lpha
eq -2$ and eta = -1The system has exactly one solution if $\odot lpha = -2$ and eta = -1 $@lpha
eq -2 \checkmark$ $\odot lpha = -2$ $\odot lpha
eq -2$ and eta
eq -1The system has infinitely many solutions if $\odot lpha
eq -2$ and eta
eq -1 $\odot lpha = -2$ and eta
eq -1 $\odot lpha = -2$ and eta = -1 🗸 $\odot lpha
eq -2$ and eta = -1

Question 8

Correct Mark 2.00 out of 2.00

Let $A=egin{bmatrix} 1&2&1\\ -1&1&0\\ 1&8&1 \end{bmatrix}$. If we want to find the LU factorization of A, then L=

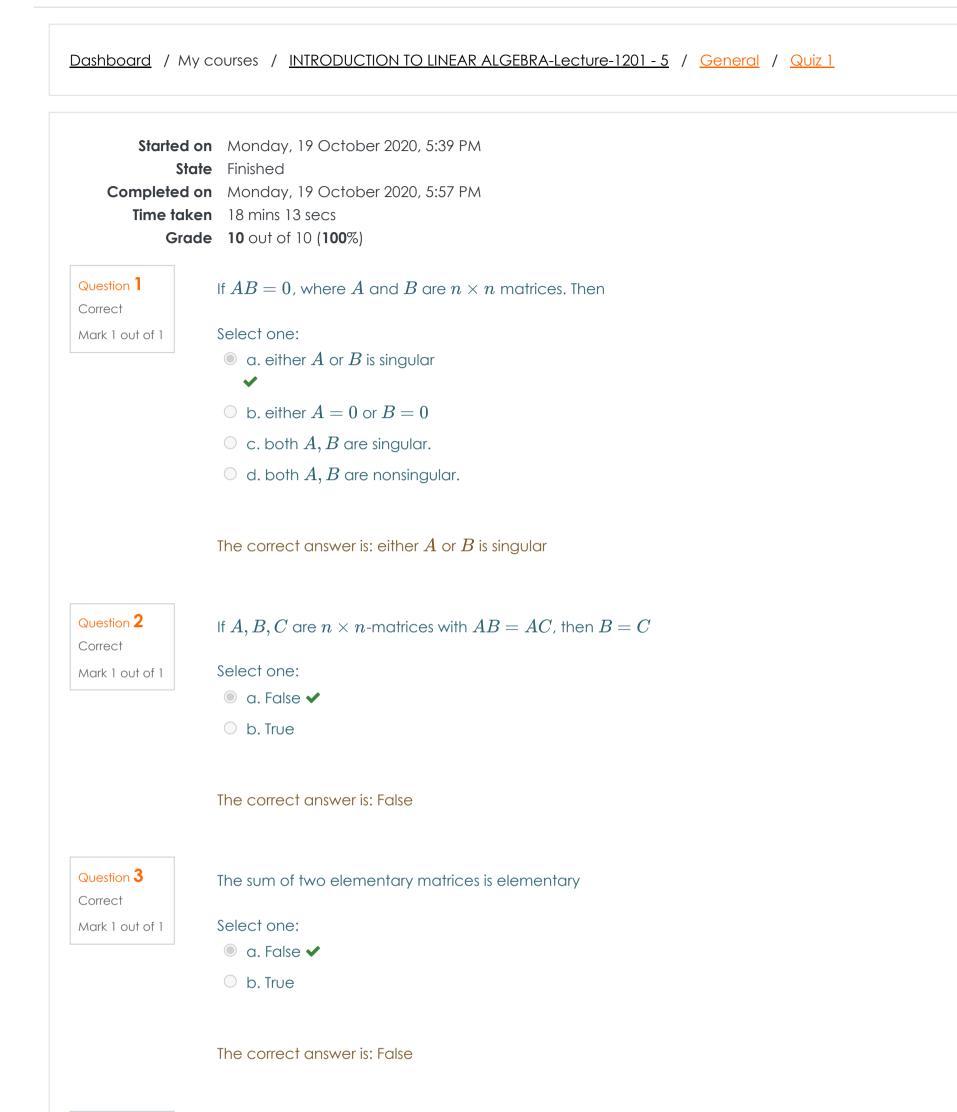
Select one:

ele	ect	one:		
		$\begin{bmatrix} 1\\ -1\\ 1 \end{bmatrix}$	0	0
	a.	-1	1	0 0
		1	2	1
	✓			
		[1	0	0
\bigcirc	b.		$\frac{1}{8}$	0
		1	8	1
		[1	0	0
\bigcirc	C.	$\begin{bmatrix} 1\\ 1 \end{bmatrix}$	1	0
		$\lfloor -1 \rfloor$	-2	1
		[1	0	0
\bigcirc	d.	1	1	0
		$\lfloor -1 \rfloor$	-8	1

Question 9	A homogeneous system can have a nontrivial solution.
Mark 0.00 out	Select one:
of 2.00	O a. True
	b. False ×
Question 10 Correct	The inverse of an elementary matrix is also an elementary matrix.
Correct Mark 2.00 out	The inverse of an elementary matrix is also an elementary matrix. Select one:
Correct	

Question 11 Correct	If a system of linear equations is undetermined, then it must have infinitely many solutions.	
Mark 2.00 out	Select one:	
of 2.00	 a. True 	
	b. False	
Question 12 Correct Mark 2.00 out	The sum of two $n imes n$ nonsingular matrices is also nonsingular. Select one:	
of 2.00	a. True	
	b. False	
محاضرات ►	Jump to Quiz 2 ►	

Data retention summary





Correct

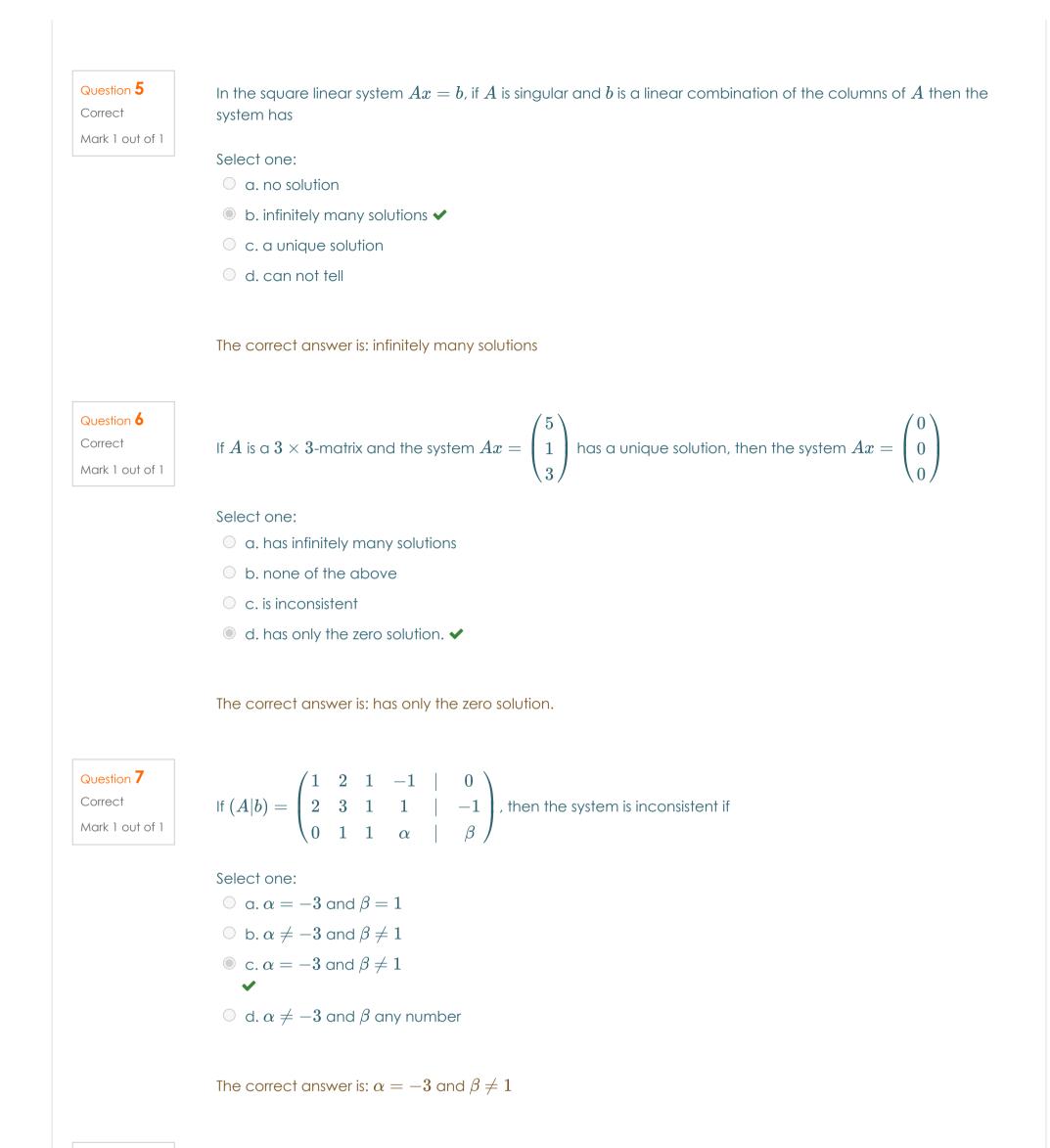
Mark 1 out of 1

If A,B are n imes n-symmetric matrices, then AB-BA is skew symmetric

Select one:

🔘 a. False

🔘 b. True 🗸



Correct

Mark 1 out of 1

If y, z are solutions to Ax = b, then y - z is a solution of the system Ax = 0.

Select one:

a. True

🔘 b. False

Question **9** Correct

If A is a 3 imes 4-matrix, and $b=a_2$ (second column of A), then a solution to the system Ax=b is

Mark 1 out of 1

Select one:
a.
$$x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$$

b. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$
c. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}$
d. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$

The correct answer is:
$$x=egin{pmatrix} 0\ 1\ 0\ 0\ \end{pmatrix}$$

Question 10 Correct Mark 1 out of 1 If B is a 3 imes 3 matrix such that $B^2=B.$ One of the following is always true

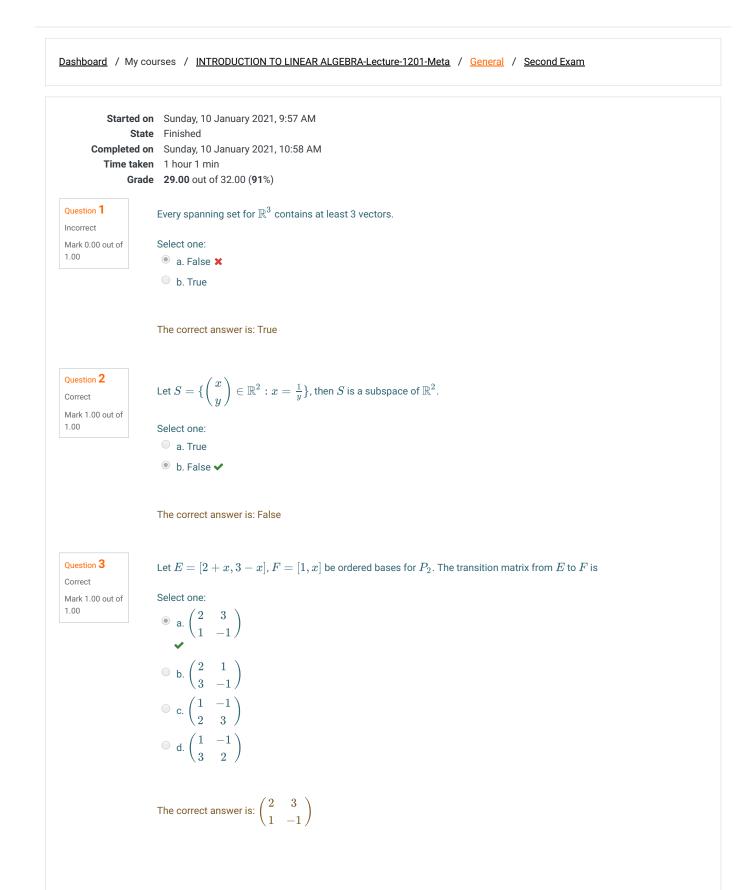
• a.
$$B^5 = B$$
.
• b. $B = 0$.
• c. $B = I$.

Select one:

• d. *B* is nonsingular.

The correct answer is: $B^5 = B$.

Data retention summary



Correct Mark 1.00 out of 1.00

Let
$$E=[2+x,1-x,x^2+1]$$
 be an ordered basis for $P_3.$ If $[p(x)]_E=egin{pmatrix}1\\-1\\3\end{pmatrix}$, then

Select one:

• a.
$$p(x) = 3x^2 + x - 3$$

• b. $p(x) = 3x^2 + 2x + 4$
• c. $p(x) = x^2 - x + 3$
• d. $p(x) = 3x^2 + 2x + 5$

The correct answer is: $p(x) = 3x^2 + 2x + 4$

Question 5 Correct

If A is a 3 imes 3-matrix, and Ax=0 has only the zero solution, then $\operatorname{nullity}(A)=$

Mark 1.00 out of 1.00

Select one:		
○ a.1		
O b. 2		
● c. 0		
~		

The correct answer is: 0

Question 6 Correct

Mark 1.00 out of 1.00

Let $S=\{egin{pmatrix} a+b+2c\ a+2c\ a+b+2c \end{pmatrix}:a,b\in\mathbb{R}\}.$ Then dimension of S equals

Select one: ○ a. 0 O b. 1 ○ c. 3

Od. 3

● d. 2 ~

The correct answer is: 2

Question 7 Incorrect

Which of the following is not a basis for the corresponding space

Mark 0.00 out of 1.00

Select one:
a. {
$$(1,1)^T$$
, $(2,-3)^T$ }; \mathbb{R}^2
b. { $5-x, x-1$ }; P_2
c. { $x+4, 1-x^2, x^2+x+3$ }; P_3
d. { $(-2,-1,-1)^T$, $(-3,-3,0)^T$, $(2,0,2)^T$ }; \mathbb{R}^3

The correct answer is: $\{(-2,-1,-1)^T,(-3,-3,0)^T,(2,0,2)^T\};\mathbb{R}^3$

Question 8 Correct	If V is a vector space of dimension n , then any subset from V that has less than n vectors is not a spanning set for V .
Mark 1.00 out of 1.00	Select one: ● a. True ✔
	b. False
	The correct answer is: True
Question 9 Correct	The vectors $\{x^2+2x+1,x-1,x^2+x+1\}$ form a basis for $P_3.$
Mark 1.00 out of 1.00	Select one: ● a. True ✔
	 b. False
	The correct answer is: True
Question 10 Correct	If A is an $n imes n$ -matrix and for each $b\in \mathbb{R}^n$ the system $Ax=b$ has a unique solution, then
Mark 1.00 out of 1.00	Select one: a. A is nonsingular
	\bigcirc b. nullity $(A)=1$
	 c. rank$(A) = n - 1$ d. A is singular
	The correct answer is: A is nonsingular
Question 11 Correct Mark 1.00 out of 1.00	The coordinate vector of $\begin{pmatrix} -3 \\ -2 \\ -5 \end{pmatrix}$ with respect to the ordered basis $\begin{bmatrix} 1 \\ 1 \\ 1 \end{pmatrix}, \begin{pmatrix} 1 \\ 2 \\ 2 \end{pmatrix}, \begin{pmatrix} 2 \\ 3 \\ 4 \end{pmatrix}$] is
	Select one: $\begin{pmatrix} 1\\ 2 \end{pmatrix}$
	\bigcirc a. $\begin{pmatrix} 1\\2\\3 \end{pmatrix}$
	• b. $\begin{pmatrix} -1 \\ 4 \\ -3 \end{pmatrix}$
	\circ c. $\begin{pmatrix} 1\\ -4\\ 3 \end{pmatrix}$
	\bigcirc d. $\begin{pmatrix} 3\\2\\5 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} -1 \\ 4 \\ -3 \end{pmatrix}$

Question 12 Correct	If A is a $3 imes 5$ -matrix, rows of A are linearly independent, then
Mark 1.00 out of	Select one:
1.00	$^{\odot}\;$ a. rank $(A)=nullity(A)+2$
	$^{\odot}$ b. rank $(A)=$ nullity (A)
	$^{\textcircled{o}}$ c. rank $(A)=nullity(A)+1$
	• d. rank $(A) = \operatorname{nullity}(A) + 3$
	The correct answer is: ${\sf rank}(A) = {\sf nullity}(A) + 1$
Question 13	If A is a $4 imes 6$ matrix, then nullity of $A\geq 2.$
Correct	Select one:
Mark 1.00 out of 1.00	● a. True ✔
	 b. False
	The correct answer is: True
14	
Question 14 Correct	If A is a $3 imes 3$ -matrix, and $Ax=0$ has only the zero solution, then ${ m rank}(A)=$
Mark 1.00 out of	Select one:
1.00	● a. 3 ✓
	© b. 1
	• c. 2
	• d. 0
	The correct answer is: 3
Question 15	Let V be a vector space of dimension 4 and $W=\{v_1,v_2,v_3,v_4,v_5\}$ a set of nonzero vectors of V , the
Correct	
Mark 1.00 out of 1.00	Select one: \bigcirc a. <i>W</i> is a basis
	 a. W is a basis b. W is a spanning set
	 c. W is linearly independent
	 d. W is linearly dependent
	 ✓ d. <i>W</i> is linearly dependent ✓
	The correct answer is: W is linearly dependent
	Let $S=\{f\in C[-1,1]:f(-1)=f(1)\}$, then S is a subspace of $C[-1,1].$
Question 16	Let $\mathcal{D} = \{\mathcal{J} \in \mathcal{O}[1,1], \mathcal{J}(1) = \mathcal{J}(1)\}$, then \mathcal{D} is a subspace of $\mathcal{O}[1,1]$.
Incorrect	
	Select one: \bigcirc a. True

The correct answer is: True

Question 17 Correct Mark 1.00 out of 1.00

If A is an m imes n-matrix, m
eq n, then either the rows or the columns of A are linearly independent

Sele	ect	one:	
۲	a.	False	~

b. True

The correct answer is: False

Question **18** Correct Mark 1.00 out of 1.00

If $f_1,f_2,\cdots,f_n\in C^{n-1}[a,b]$ and $W[f_1,f_2,\cdots,f_n](x_0)
eq 0$ for some $x_0\in [a,b]$, then f_1,f_2,\cdots,f_n are

Select one:

- Interview of the second se
- b. linearly dependent
- ${\hfill}$ c. form a spanning set for $C^{n-1}[a,b]$

The correct answer is: linearly independent.

Question 19

Correct Mark 1.00 out of 1.00 let A be a 4 imes 7-matrix, if the row echelon form of A has 2 nonzero rows, then dim(column space of A) is

Sele	ect one:
	a. 3
	b. 5
۲	c. 2 🗸
	d. 7

The correct answer is: 2

Question **20**

Correct Mark 1.00 out of 1.00 Let $E = [2 + x, 1 - x, x^2 + 1]$ be an ordered basis for P_3 . If $p(x) = -3x^2 + x + 5$, then the coordinate vector of p(x) with respect to E is

Select one:

a.
$$\begin{pmatrix} 2 \\ -3 \\ 3 \end{pmatrix}$$

b.
$$\begin{pmatrix} 3 \\ 2 \\ -3 \end{pmatrix}$$

c.
$$\begin{pmatrix} 3 \\ 5 \\ 4 \end{pmatrix}$$

d.
$$\begin{pmatrix} 3 \\ -3 \\ 2 \end{pmatrix}$$

The correct answer is: $\begin{pmatrix} 3\\ 2\\ -3 \end{pmatrix}$

Correct Mark 1.00 out of 1.00

The functions $\sin x, \cos x, \sin(2x)$ in $C^2[0,2\pi]$ are

Select one: a. linearly dependent

 $^{\odot}\,$ b. linearly independent $\checkmark\,$

The correct answer is: linearly independent

Question 22 Correct Mark 1.00 out of 1.00

If
$$A = \begin{pmatrix} 1 & -2 & 1 & 0 \\ -1 & 2 & 2 & 0 \\ 2 & -4 & 0 & 0 \end{pmatrix}$$
, then $\operatorname{rank}(A) = 3$.

Select one:

◉ a. False ✔

🔍 b. True

The correct answer is: False

Question 23 Correct Mark 1.00 out of 1.00

The transition matrix from the standard basis
$$S = \left[e_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}, e_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}\right]$$
 to the ordered basis $U = \left[u_1 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}, u_2 = \begin{pmatrix} 3 \\ 7 \end{pmatrix}\right]$ is

Select one:

a.
$$T = \begin{pmatrix} 1 & -3 \\ -2 & 7 \end{pmatrix}$$

b. $T = \begin{pmatrix} -7 & 3 \\ 2 & -1 \end{pmatrix}$
c. $T = \begin{pmatrix} 7 & -3 \\ -2 & 1 \end{pmatrix}$
d. $T = \begin{pmatrix} 1 & 3 \\ 2 & 7 \end{pmatrix}$

The correct answer is:
$$T=egin{pmatrix} 7&-3\-2&1 \end{pmatrix}$$

Question 24 Correct Mark 1.00 out of

1.00

Let V be a vector space, $\{v_1, v_2, \dots v_n\}$ a spanning set for V, and $v \in V$, then the vectors $\{v_1, v_2, \dots v_n, v\}$ form a spanning set for V.

Select one:

a. False

b. True

Question 25	$(1 \ 4 \ 1 \ 2 \ 1)$
Correct	The nullity of $A=\left[egin{array}{cccccccccccccccccccccccccccccccccccc$
Mark 1.00 out of 1.00	The nullity of $A=egin{pmatrix} 1&4&1&2&1\\ 2&6&-1&2&-1\\ 2&10&0&4&0 \end{pmatrix}$ is
	Select one:
	• a. 3
	● b. 0
	• c. 1
	• d. 2
	✓
	The correct answer is: 2
Question 26 Correct	The vectors $\{(1,-1,1)^T,(1,-1,2)^T,(1,-1,2)^T\}$ form a basis for $\mathbb{R}^3.$
Mark 1.00 out of	Select one:
1.00	● a. False ✓
	b. True
Question 27	The coordinate vector of $8+6x$ with respect to the basis $[2x,2]$ is $(4,3)^T$
Correct	
Mark 1.00 out of 1.00	Select one: ● a. False ✔
	 a. Faise b. True
	The correct answer is: False
Question 28 Correct	Let A be a $5 imes 4$ matrix, and rank $(A)=4$
	Select one:
Mark 1.00 out of	
Mark 1.00 out of 1.00	$^{\odot}$ a. A has a row of zeros
	 a. A has a row of zeros b. The columns of A are linearly independent
	$^{ extsf{ extsf} extsf}}}}}}}}}}}}}}}}}}} }} } } } } } } } }$
	 b. The columns of A are linearly independent \checkmark

Correct Mark 1.00 out of 1.00 Let A be a 4 imes 3 matrix, and $\operatorname{nullity}(A)=0$, then

Select one:

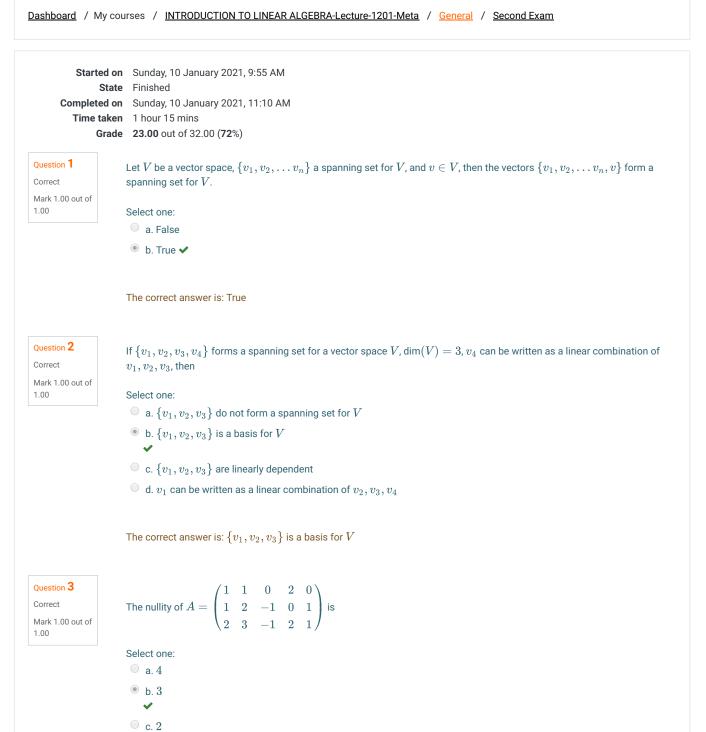
- ${\hfill}$ a. The rows of A are linearly independent
- $^{\textcircled{o}}~$ b. The columns of A are linearly independent \checkmark

c. rank
$$(A)=1$$

 $^{igodoldsymbol{ imes}}$ d. the columns of A form a basis for \mathbb{R}^4

The correct answer is: The columns of ${\cal A}$ are linearly independent

Question 30 Correct Mark 1.00 out of 1.00	dimension of the subspace $S = \text{Span} \left\{ A_1 = \begin{pmatrix} 1 & 2 \\ 1 & 0 \end{pmatrix}, A_2 \begin{pmatrix} 0 & -1 \\ 1 & 3 \end{pmatrix}, A_3 = \begin{pmatrix} -3 & -8 \\ -1 & 6 \end{pmatrix} \right\}$ is Select one: a. 1 b. 2 c. 0 d. 3
	The correct answer is: 2
Question 31 Correct Mark 1.00 out of 1.00	If the columns of $A_{n \times n}$ are linearly independent and $b \in \mathbb{R}^n$, then the system $Ax = b$ is inconsistent. Select one: a. False \checkmark b. True
	The correct answer is: False
Question 32 Correct Mark 1.00 out of 1.00	If v_1, v_2, \dots, v_k are vectors in a vector space V , and $\text{Span}(v_1, v_2, \dots, v_k) = \text{Span}(v_1, v_2, \dots, v_{k-1})$, then v_k can be written as alinear combination of v_1, v_2, \dots, v_{k-1} Select one: • a. True \checkmark • b. False
	The correct answer is: True
	Jump to Announcements \rightarrow



O d. 1

The correct answer is: 3

Correct Mark 1.00 out of 1.00

Let
$$E=[2+x,1-x,x^2+1]$$
 be an ordered basis for P_3 . If $[p(x)]_E=egin{pmatrix}1\\-1\\3\end{pmatrix}$, then

Select one:

• a. $p(x) = 3x^2 + 2x + 4$ • b. $p(x) = 3x^2 + 2x + 5$ • c. $p(x) = 3x^2 + x - 3$ • d. $p(x) = x^2 - x + 3$

The correct answer is: $p(x) = 3x^2 + 2x + 4$

Question **5**

Let $S = \{f \in C[-1,1] : f(-1) = f(1)\}$, then S is a subspace of C[-1,1].

Incorrect Mark 0.00 out of 1.00

Select one: a. True

🖲 b. False 🗙

The correct answer is: True

Question **6** Incorrect Mark 0.00 out of 1.00

If $\{v_1, \dots, v_n\}$ are linearly independent and v is not in Span $\{v_1, \dots, v_n\}$, then $\{v_1, \dots, v_n, v\}$ are linearly independent.

Select one:

a. Trueb. False ×

The correct answer is: True

Question **7** Correct

Mark 1.00 out of 1.00

If A is a nonzero 3 imes 2 matrix such that Ax = 0 has infinite number of solutions, then ${\sf rank}(A) = 1$.

Select one:

🍥 a. True 🗸

b. False

Question 8	$\langle a+b+2c \rangle$
Correct	Let $S=\{egin{pmatrix}a+2c\ & a+b\in\mathbb{R}\}.$ Then dimension of S equals
Mark 1.00 out of 1.00	Let $S=\{egin{pmatrix} a+b+2c\ a+2c\ a+b+2c \end{pmatrix}:a,b\in\mathbb{R}\}.$ Then dimension of S equals
	Select one:
	● a. 2
	✓
	• b. 0
	• c. 3
	○ d. 1
	The correct answer is: 2
Question 9	
Correct	$\dimig(ext{span}(x^2,3+x^2,x^2+1)ig)$ is
Mark 1.00 out of	Select one:
1.00	○ a. 0
	○ b.1
	● c. 2
	✓
	O d. 3
	The correct answer is: 2
Question 10 Correct	dimension of the subspace $S = \operatorname{Span} \left\{ A_1 = \begin{pmatrix} 2 & 1 \\ 0 & 1 \end{pmatrix}, A_2 \begin{pmatrix} -1 & 0 \\ 3 & 1 \end{pmatrix}, A_3 = \begin{pmatrix} -8 & -3 \\ 6 & -1 \end{pmatrix} \right\}$ is
Mark 1.00 out of 1.00	Select one:
	• a. 0
	● b.1
	◎ b.1
	 b. 1 c. 2
	 b. 1 c. 2 ✓
Question 11	 b. 1 c. 2 ✓ d. 3
Question 11 Correct Mark 1.00 out of	 b. 1 c. 2 d. 3 The correct answer is: 2

$$\begin{array}{c} \bullet \quad \text{a. } \{(1,1)^T, (2,-3)^T\}; \mathbb{R}^2 \\ \bullet \quad \text{b. } \{(-2,-1,-1)^T, (-3,-3,0)^T, (2,0,2)^T\}; \mathbb{R}^3 \\ \checkmark \\ \bullet \quad \text{c. } \{5-x,x-1\}; P_2 \\ \bullet \quad \text{d. } \{x+4,1-x^2,x^2+x+3\}; P_3 \end{array}$$

The correct answer is: $\{(-2,-1,-1)^T,(-3,-3,0)^T,(2,0,2)^T\};\mathbb{R}^3$

Correct Mark 1.00 out of 1.00

The transition matrix from the standard basis
$$S = \left[e_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}, e_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}\right]$$
 to the ordered basis $U = \left[u_1 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}, u_2 = \begin{pmatrix} 2 \\ 5 \end{pmatrix}\right]$ is

Select one:

• a.
$$T = \begin{pmatrix} -1 & 2 \\ 2 & -5 \end{pmatrix}$$

• b. $T = \begin{pmatrix} 5 & -2 \\ -2 & 1 \end{pmatrix}$
• c. $T = \begin{pmatrix} 1 & 2 \\ 2 & 5 \end{pmatrix}$
• d. $T = \begin{pmatrix} 1 & -2 \\ -2 & 5 \end{pmatrix}$

The correct answer is: $T = \begin{pmatrix} 5 & -2 \\ -2 & 1 \end{pmatrix}$

Question 13

1.00

If A is a 5 imes 4-matrix, and Ax=0 has only the zero solution, then $\mathrm{rank}(A)=4.$

Correct Mark 1.00 out of

a. True b. False

Select one:

The correct answer is: True

Question 14

Mark 1.00 out of 1.00

Correct

If the columns of $A_{n imes n}$ are linearly independent and $b\in \mathbb{R}^n$, then the system Ax=b has

Select one:

- a. exactly 2 solutions
- b. exactly one solution
- c. no solution
- d. infinitely many solutions

The correct answer is: exactly one solution

Question 15 Incorrect

Mark 0.00 out of 1.00

If A is a 3 imes 5-matrix, rows of A are linearly independent, then

Select one: $^{\odot}\,$ a. rank $(A)={
m nullity}(A)+3$ $^{ \odot }$ b. rank $(A) = \operatorname{nullity}(A) + 2$ × \bigcirc c. rank $(A) = \operatorname{nullity}(A) + 1$ • d. rank(A) = nullity(A)

The correct answer is: $\mathrm{rank}(A) = \mathrm{nullity}(A) + 1$

Correct Mark 1.00 out of 1.00

Select one:

0

a.
$$\begin{pmatrix} -1 & 1 \\ 2 & 3 \end{pmatrix}$$

b. $\begin{pmatrix} 1 & 2 \\ -1 & 3 \end{pmatrix}$
c. $\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$
 \checkmark
d. $\begin{pmatrix} -1 & 1 \\ 3 & 2 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$

Question 17

Correct Mark 1.00 out of 1.00

Select one:

~

- $^{\odot}$ a. linearly independent and not a spanning set for V.
- \bigcirc b. linearly independent and a spanning set for V.
- c. linearly dependent and a spanning set
- \bigcirc d. linearly dependent and not a spanning set for V.

The correct answer is: linearly independent and not a spanning set for V.

If $\{v_1, v_2, v_3, v_4\}$ is a basis for a vector space V , then the set $\{v_1, v_2, v_3\}$ is

Question 18

Correct Mark 1.00 out of 1.00

If A is a 3 imes 2 matrix, then

- Select one: $\hfill \circ$ a. The rows of A are linearly dependent
 - ~
- \bigcirc b. The columns of A are linearly dependent
- ${}^{\bigcirc}\,$ c. The columns of A are linearly independent
- ${}^{\bigcirc}$ d. Rank(A)=3

The correct answer is: The rows of \boldsymbol{A} are linearly dependent

Question **19** Incorrect

Let A be an m imes n matrix. If the rows of A are linearly dependent, then $n\leq m$

Mark 0.00 out of	
1.00	

Select one: \bigcirc a. True

🖲 b. False 🗙

Question 20 Correct

Mark 1.00 out of 1.00

The vectors $\{x+1, x^2+2x+1, x^2+x+1\}$ form a basis for P_3 .

Select one: a. True

🔍 b. False

The correct answer is: True

Question 21 Correct

Mark 1.00 out of 1.00

If A is a 3×5 matrix, then

Select one:

✓

 ${\hfill}$ b. The rows of A are linearly dependent

- ${}^{\bigcirc}\,$ c. Rank(A)=2
- ${\hfill}$ d. The columns of A are linearly independent

The correct answer is: $\operatorname{nullity}(A) \geq 2$

Question 22		
Correct		
Mark 1.00 out of		
1.00		

let A be a 4 imes 7-matrix, if the row echelon form of A has 2 nonzero rows, then dim(column space of A) is

out of	

Select one: ● a. 2 ✓

b. 3
c. 5
d. 7

The correct answer is: 2

Question 23 Correct Mark 1.00 out of 1.00 if $\{v_1, v_2, \cdots, v_k\}$ is a spanning set for $\mathbb{R}^{3 \times 2}$, then Select one:

	a. $k \leq 6$
	b. $k>6$
	c. $k=6$
۲	d. $k \geq 6$
	✓

The correct answer is: $k\geq 6$

Question 24 Incorrect

Mark 0.00 out of 1.00

The coordinate vector of 6+8x with respect to the basis [2x,2] is $(4,3)^T$

Sele	ect	one:	
۲	a.	False	×

b. True

Correct Mark 1.00 out of 1.00

Let $E = [2 + x, 1 - x, x^2 + 1]$ be an ordered basis for P_3 . If $p(x) = 2x^2 - 2x + 1$, then the coordinate vector of p(x) with respect to E is

Select one:

 $\bigcirc a. \begin{pmatrix} -2 \\ -3 \\ 2 \end{pmatrix}$ • b. $\begin{pmatrix} -1 \\ 1 \\ 2 \end{pmatrix}$ • c. $\begin{pmatrix} 2 \\ -3 \\ 1 \end{pmatrix}$ $\begin{pmatrix} 3\\2 \end{pmatrix}$ ◯ d.

The correct answer is:
$$\begin{pmatrix} -1 \\ 1 \\ 2 \end{pmatrix}$$

Question 26 Incorrect

Mark 0.00 out of 1.00

If A is an $m imes n$ -matrix, and columns of A are linearly independent, then	If A is an m	imes n-matrix, and c	olumns of A are	linearly independent, then
---	------------------	----------------------	-------------------	----------------------------

Sele	ect one:
	a. $n \leq m$
۲	b. $m \leq n$
	c. $m = n + 1$
	d. $m=n$

The correct answer is: $n \leq m$

Question 27 Correct Mark 1.00 out of 1.00

Let $S=\{inom{x}{y}\in \mathbb{R}^2: x=y+1\}$, then S is a subspace of $\mathbb{R}^2.$ Select one: 🍥 a. False 🗸 🔍 b. True

The correct answer is: False

Question 28 Incorrect Mark 0.00 out of 1.00

If $A = \begin{pmatrix} -1 & -2 & -1 & 0 \\ 1 & 2 & 2 & 0 \\ -2 & -4 & 0 & 0 \end{pmatrix}$, then rank(A) = 3.

Select one:

a. False b. True X

- \

	The correct answer is: False
Question 29 Incorrect	If the rows of an $n imes n$ -matrix A form a basis for $\mathbb{R}^{1 imes n}$, then the columns of A also form a basis for $\mathbb{R}^n.$
Mark 0.00 out of	Select one:
1.00	a. False ×
	O b. True
	The correct answer is: True
Question 30 Correct	If A is a $4 imes 6$ matrix, then nullity of $A\geq 2.$
Mark 1.00 out of	Select one:
1.00	a. False
	In the second secon
	The correct answer is: True
Question 31 Incorrect	The vectors $\{(1,-1,1)^T,(1,-1,2)^T,(1,-2,1)^T\}$ form a basis for $\mathbb{R}^3.$
Mark 0.00 out of	Select one:
1.00	O a. True
	Is False ×
	The correct answer is: True
Question 32	If A is an $n imes n$ singular matrix, then
Correct Mark 1.00 out of	Select one:
1.00	 a. The columns of A are linearly dependent
	✓
	$^{\bigcirc}$ b. $N(A)=\{0\}$
	$^{\odot}$ c. The rows of A are linearly independent
	$^{igodoldsymbol{ imes}}$ d. rank $(A)=n$
	The correct answer is: The columns of A are linearly dependent

Dashboard / My courses	/ INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201-Meta	/ <u>General</u> /	<u>Second Exam</u>
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Started onSunday, 10 January 2021, 9:45 AMStateFinishedCompleted onSunday, 10 January 2021, 10:59 AMTime taken1 hour 14 minsGrade22.00 out of 32.00 (69%)

Question 1 Correct Mark 1.00 out of 1.00 rade 22.00 out of 32.00 (69%) dimension of the subspace $S = \text{Span} \left\{ A_1 = \begin{pmatrix} 0 & 2 \\ 1 & 1 \end{pmatrix}, A_2 \begin{pmatrix} 3 & -1 \\ 1 & 0 \end{pmatrix}, A_3 = \begin{pmatrix} 6 & -8 \\ -1 & -3 \end{pmatrix} \right\}$ is Select one: \bigcirc a.3 \bigcirc b.2 \checkmark \bigcirc \bigcirc c.0 \bigcirc d.1 The correct answer is: 2 If A is a 3 × 3-matrix, and Ax = 0 has only the zero solution, then nullity(A) =Select one:

Question 2 Correct Mark 1.00 out of 1.00

Select or a. 0 c. 3 d. 1

The correct answer is: 0

 Question 3
 dim (span($x^2, 3 + x^2, x^2 + 1$)) is

 Correct
 Select one:

 Mark 1.00 out
 a. 2

 \circ b. 3

 c. 0
 d. 1

The correct answer is: 2

Question 4	if $\{v_1, v_2, \cdots, v_k\}$ is a spanning set for $\mathbb{R}^{3 imes 2}$, then
Incorrect	
Mark 0.00 out of 1.00	Select one: \odot a. $k \leq 6$
	$\overset{\odot}{\times}$
	\bigcirc b. $k=6$
	\bigcirc c. $k \geq 6$
	igcomeq d. $k>6$
	The correct answer is: $k\geq 6$
Question 5 Correct	Let $S=\{inom{x}{y}\in \mathbb{R}^2: x=-y\}$, then S is a subspace of $\mathbb{R}^2.$
Mark 1.00 out of 1.00	Select one:
	 a. False
	b. True
	The correct answer is: True
Question 6 Correct	If $f_1,f_2,\cdots,f_n\in C^{n-1}[a,b]$ and $W[f_1,f_2,\cdots,f_n](x_0)=0$ for some $x_0\in [a,b]$, then f_1,f_2,\cdots,f_n are linearly dependent.
Mark 1.00 out of 1.00	Select one:
	a. False
	🔘 b. True
	The correct answer is: False
Question 7 Incorrect	If A is a nonzero $4 imes 2$ -matrix and $Ax=0$ has infinitely many solutions, then ${\sf rank}(A)=$
Mark 0.00 out	Select one:
of 1.00	O a. 3
	b. 2
	×

The correct answer is: 1

O c.1

 \bigcirc d. 4

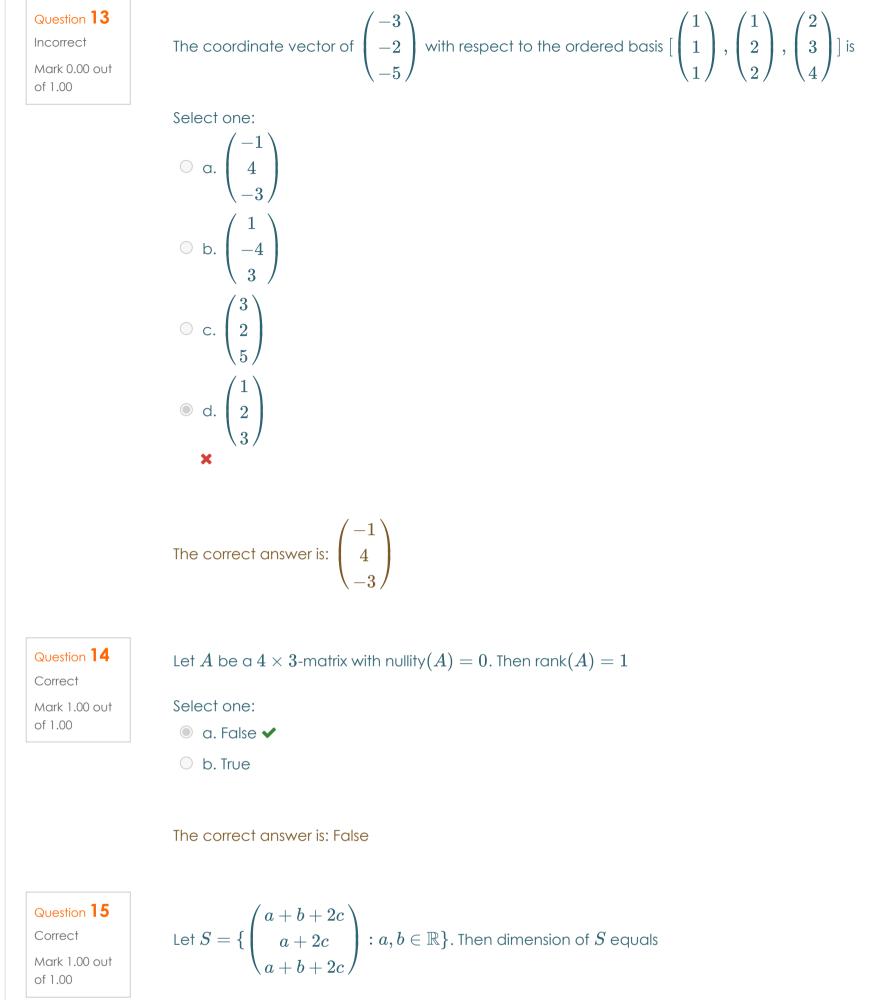
Question 8 Correct Mark 1.00 out of 1.00

The coordinate vector of 8+6x with respect to the basis [2x,2] is $(4,3)^T$ Select one: 🔘 a. True 🔘 b. False 🗸

The correct answer is: False

Question 9 Incorrect Mark 0.00 out of 1.00	If $\{v_1, v_2, v_3, v_4\}$ forms a spanning set for a vector space V , dim $(V) = 3$, v_4 can be written as a linear combination of v_1, v_2, v_3 , then Select one: a. $\{v_1, v_2, v_3\}$ are linearly dependent
	$igstarrow$ b. $\{v_1,v_2,v_3\}$ is a basis for V
	igodoldoldoldoldoldoldoldoldoldoldoldoldol
	\bigcirc d. $\{v_1,v_2,v_3\}$ do not form a spanning set for V
	The correct answer is: $\{v_1, v_2, v_3\}$ is a basis for V
Question 10 Correct	Let V be a vector space, $\{v_1,v_2,\ldots v_n\}$ a spanning set for V , and $v\in V$, then the vectors $\{v_1,v_2,\ldots v_n,v\}$ form a spanning set for V .
Mark 1.00 out of 1.00	Select one:
	 a. False
	b. True
	The correct answer is: True
Question 11	Let A be a $4 imes 5$ -matrix, with rank $(A)=3$. Then The rows of A are linearly dependent.
Incorrect Mark 0.00 out	Select one:
of 1.00	 a. True
	b. False ×
	The correct answer is: True
Question 12 Incorrect	Let A be a $2 imes 4$ matrix, and rank $(A)=2$, then, the columns of A form a spanning set for $\mathbb{R}^2.$
Mark 0.00 out	Select one:
of 1.00	a. False ×
	 b. True

The correct answer is: True



Select one: a. 2 b. 3

c.0d.1

The correct answer is: 2

Question 16 Correct Mark 1.00 out

of 1.00

The transition matrix from the standard basis
$$S = \left[e_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}, e_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}\right]$$
 to the ordered basis $U = \left[u_1 = \begin{pmatrix} 7 \\ 2 \end{pmatrix}, u_2 = \begin{pmatrix} 3 \\ 1 \end{pmatrix}\right]$ is

Select one:

$$\begin{array}{c} \circ \text{ a. } T = \begin{pmatrix} -7 & 3 \\ 2 & -1 \end{pmatrix} \\ \circ \text{ b. } T = \begin{pmatrix} 7 & 3 \\ 2 & 1 \end{pmatrix} \\ \circ \text{ c. } T = \begin{pmatrix} 1 & -3 \\ -2 & 7 \end{pmatrix} \\ \checkmark \\ \circ \text{ d. } T = \begin{pmatrix} 7 & -3 \\ -2 & 1 \end{pmatrix}$$

The correct answer is: $T=egin{pmatrix} 1 & -3\ -2 & 7 \end{pmatrix}$

Question 17 Correct Mark 1.00 out of 1.00 If A is a 3×3 -matrix, and Ax = 0 has only the zero solution, then rank(A) =Select one: \bigcirc a. 0 \bigcirc b. 2

O c.1

◎ d.3

The correct answer is: 3

Question **18** Correct Mark 1.00 out of 1.00 The vectors $\{(1,-1,-4)^T,(1,-1,1)^T,(1,-1,2)^T\}$ form a basis for \mathbb{R}^3 .

Select one:

🔍 a. True

🔍 b. False 🗸

Question 19

Correct

Mark 1.00 out of 1.00

The functions $\sin x, \cos x, \sin(2x)$ in $C^2[0,2\pi]$ are

Select one:

Interview of the second se

b. linearly dependent

The correct answer is: linearly independent

Question 20 Correct Mark 1.00 out of 1.00	If $A=egin{pmatrix} 1&-2&1&0\ -1&2&2&0\ 2&-4&0&0 \end{pmatrix}$, then ${ m rank}(A)=3.$
	Select one:
	a. False
	O b. True
	The correct answer is: False
Question 21 Correct	The vectors $\{x+1, x^2+2x+1, x^2+x+1\}$ form a basis for $P_3.$
Mark 1.00 out	Select one:
of 1.00	 a. False
	b. True
	The correct answer is: True
Question 22 Correct	If A is a $3 imes 5$ matrix, then
Mark 1.00 out	Select one:
of 1.00	\odot a. The columns of A are linearly independent
	\odot b. The rows of A are linearly dependent
	<pre></pre>
	\bigcirc d. $Rank(A)=2$
	The correct answer is: $nullity(A) \geq 2$
Question 23 Correct Mark 1.00 out of 1.00	The nullity of $A=egin{pmatrix} 1&4&1&1&1\ 2&6&-1&0&-1\ 3&10&0&4&0 \end{pmatrix}$ is
011.00	
011.00	Select one:

c.1d.3

○ b.4

The correct answer is: 2

Question 24 Correct	If $f_1,f_2,\cdots,f_n\in C^{n-1}[a,b]$ and $W[f_1,f_2,\cdots,f_n](x_0) eq 0$ for some $x_0\in [a,b]$, then f_1,f_2,\cdots,f_n ar
Mark 1.00 out	Select one:
of 1.00	 a. linearly dependent
	${igle}$ b. form a spanning set for $C^{n-1}[a,b]$
	◎ c. linearly independent. ✓
	The correct answer is: linearly independent.
Question 25 Incorrect	let A be a $3 imes 5$ -matrix, if the row echelon form of A has 1 nonzero row, then dim(column space of A) is
Mark 0.00 out of 1.00	Select one:
	• b. 2
	◎ c.3 ×
	O d. 1
	The correct answer is: 1
Question 26 Correct	Let $E=[2+x,1-x,x^2+1]$ be an ordered basis for $P_3.$ If $p(x)=-3x^2+x+5$, then the coordinate vector of $p(x)$ with respect to E is
Mark 1.00 out of 1.00	Select one:
	• a. $\begin{pmatrix} 3 \\ 2 \\ -3 \end{pmatrix}$
	• b. $\begin{pmatrix} 3 \\ -3 \\ 2 \end{pmatrix}$
	$\circ c. \begin{pmatrix} 2\\ -3\\ 3 \end{pmatrix}$
	\bigcirc d. $\begin{pmatrix} 3\\5\\. \end{pmatrix}$



Question 27 Correct Mark 1.00 out

of 1.00

Let E=[3-x,2+x] , F=[x,1] be ordered bases for $P_2.$ The transition matrix from E to F is

Selectione: a. $\begin{pmatrix} 1 & -1 \\ 2 & 3 \end{pmatrix}$ b. $\begin{pmatrix} 3 & -1 \\ 2 & 1 \end{pmatrix}$ c. $\begin{pmatrix} -1 & 3 \\ 1 & 2 \end{pmatrix}$ d. $\begin{pmatrix} -1 & 1 \\ 3 & 2 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} -1 & 1 \\ 3 & 2 \end{pmatrix}$

Question 28 Correct	Let A be a $4 imes 3$ matrix, and nullity $(A)=0$, then
Mark 1.00 out of 1.00	Select one: \odot a. The columns of A are linearly independent \checkmark
	\bigcirc b. The rows of A are linearly independent
	\bigcirc c. rank $(A)=1$
	\bigcirc d. the columns of A form a basis for \mathbb{R}^4
	The correct answer is: The columns of A are linearly independent
Question 29 Incorrect	Let A be a $3 imes 5$ matrix, and nullity $(A)=2$, then the columns of A form a aspanning set for \mathbb{R}^3
Mark 0.00 out	Select one:
of 1.00	O a. True
	b. False ×
	The correct answer is: True
Question 30	If A is a $3 imes 5$ -matrix, rows of A are linearly independent, then

Mark 1.00 out of 1.00

Correct

Select one:

 \checkmark

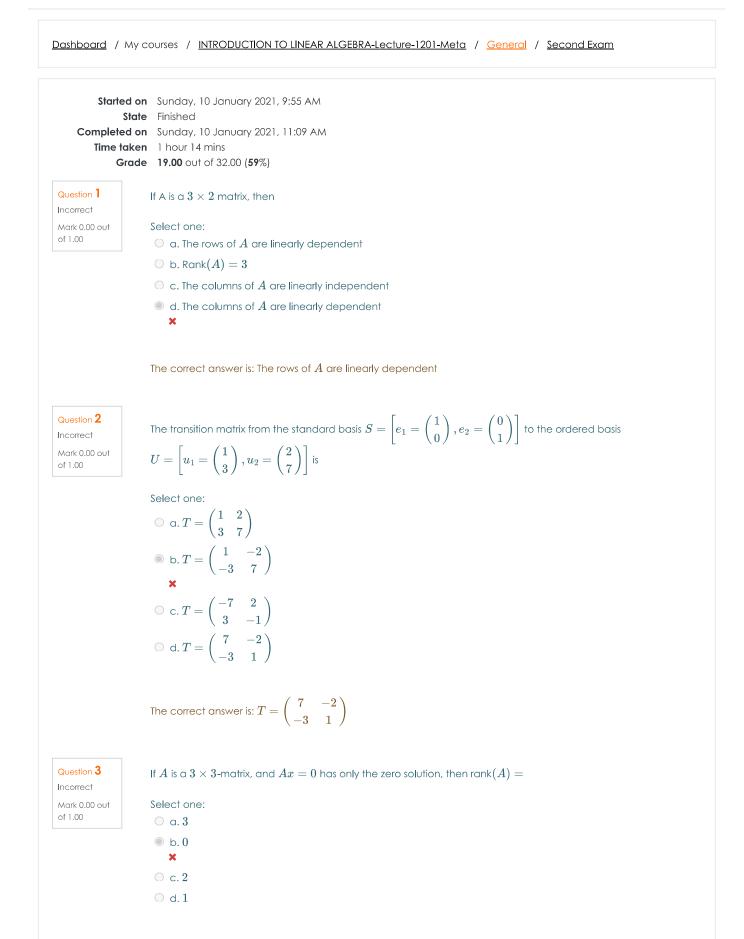
 ${igle}$ a. rank $(A)={
m nullity}(A)+3$

b. rank(A) = nullity(A)
c. rank(A) = nullity(A) + 2
d. rank(A) = nullity(A) + 1

The correct answer is: $\mathrm{rank}(A) = \mathrm{nullity}(A) + 1$

<u>D</u>(

Question 31 Incorrect	If V is a vector space of dimension n , then any subset of V which has more than n vectors $V.$	s is a spanning set for
Mark 0.00 out of 1.00	Select one:	
	 a. False 	
	b. True X	
	The correct answer is: False	
Question 32 Incorrect	Let $S=\{f\in C[-1,1]: f ext{ is an odd function }\}$, then S is a subspace of $C[-1,1].$	
Mark 0.00 out	Select one:	
of 1.00	a. False ×	
	🔍 b. True	
	The correct answer is: True	
	Jump to	Announcements 🕨



The correct answer is: 3

Question 4 Correct Mark 1.00 out of 1.00	The nullity of $A = \begin{pmatrix} 1 & 4 & 1 & 2 & 2 \\ 2 & 6 & -1 & 2 & 1 \\ 3 & 10 & 0 & 4 & 3 \end{pmatrix}$ is
	Select one:
	O a. 1
	b.3
	• c.0
	O d. 2
	The correct answer is: 3
Question 5 Correct Mark 1.00 out of 1.00	If $A=egin{pmatrix} 1&-2&1&0\ -1&2&2&0\ 2&-2&0&0 \end{pmatrix}$, then ${ m rank}(A)=3.$
	Select one:
	🍥 a. True 🗸
	O b. False
	The correct answer is: True
Question 6 Incorrect	If A is a $3 imes 5$ -matrix, rows of A are linearly independent, then
Mark 0.00 out	Select one:
of 1.00	\bigcirc a. rank $(A)=$ nullity $(A)+1$
	• b. $\operatorname{rank}(A) = \operatorname{nullity}(A)$
	• c. $\operatorname{rank}(A) = \operatorname{nullity}(A) + 2$
	\bigcirc d. rank $(A)=nullity(A)+3$
	The correct answer is: $\mathrm{rank}(A) = \mathrm{nullity}(A) + 1$
Question 7 Correct	let A be a $3 imes 5$ -matrix, if the row echelon form of A has 1 nonzero row, then dim(column space of A)
	Select one:
Mark 1.00 out	O a. 2
of 1.00	0.2
	○ 0.2 ○ b.3

The correct answer is: 1

Question 8	If $T_{n imes n}$ is a transition matrix between two bases for a vector space V , $\dim(V)=n>0$, then
	Select one:
Mark 0.00 out of 1.00	• a. nullity $(T) = n$
	\mathbf{x}
	\odot b. T is nonsingular
	\bigcirc c. det $(T)=1$
	\bigcirc d. rank $(T)=1$
	The correct answer is: T is nonsingular
Question 9 Incorrect	If S is a subset of a vector space V , and $0\in S$, then S is a subspace of $V.$
Mark 0.00 out	Select one:
of 1.00	a. True ×
	O b. False
	The correct answer is: False
Question 10	If A is an $n imes n$ singular matrix, then
Mark 0.00 out	Select one:
of 1.00	${}^{\odot}$ a. rank $(A)=n$
	×
	\bigcirc b. $N(A)=\{0\}$
	\odot c. The columns of A are linearly dependent
	\bigcirc d. The rows of A are linearly independent
	The correct answer is: The columns of A are linearly dependent
Question 11 Correct	Let A be a $5 imes 4$ matrix, and rank $(A)=4$
Mark 1.00 out	Select one:
of 1.00	\bigcirc a. The rows of A are linearly independent
	\bigcirc b. A has a row of zeros
	\bigcirc c. nullity $(A)=1$
	 d. The columns of A are linearly independent
	•

The correct answer is: The columns of \boldsymbol{A} are linearly independent

Let
$$S=\{inom{x}{y}\in \mathbb{R}^2: x=1-y\}$$
 , then S is a subspace of $\mathbb{R}^2.$

Select one: a. True b. False 🗸

The correct answer is: False

Question 13 Correct Mark 1.00 out of 1.00

Which of the following **is not a basis** for the corresponding space Select one: a. $\{(-2, -1, -1)^T, (-3, -3, 0)^T, (2, 0, 2)^T\}$; \mathbb{R}^3 b. $\{x + 4, 1 - x^2, x^2 + x + 3\}$; P_3 c. $\{5 - x, x - 1\}$; P_2 d. $\{(1, 1)^T, (2, -3)^T\}$; \mathbb{R}^2 The correct answer is: $\{(-2, -1, -1)^T, (-3, -3, 0)^T, (2, 0, 2)^T\}$; \mathbb{R}^3

Question 14 Correct Mark 1.00 out of 1.00 If A is a 4 imes 6 matrix, then nullity of $A\geq 2$.

Select one: a. True ✓ b. False

The correct answer is: True

Question 15 Incorrect Mark 0.00 out of 1.00 The vectors $\{(1, -1, 1)^T, (1, -3, 2)^T, (1, -2, 1)^T\}$ form a basis for \mathbb{R}^3 . Select one: a. False \thickapprox b. True

The correct answer is: True

Question 16 Correct Mark 1.00 out of 1.00 If A,B are two row equivalent $m\times n\text{-matrices},$ then $\mathrm{rank}(A)=\!\mathrm{rank}(B)$

Select one: a. True ✓
b. False

The correct answer is: True

Question 17 Correct	If A is a $3 imes 3$ -matrix, and $Ax=0$ has only the zero solution, then $nullity(A)=$
Mark 1.00 out	Select one:
of 1.00	◎ a.0
	0 b.2
	○ c. 3
	O d.1
	The correct answer is: 0
Question 18 Correct	If A is a nonzero $3 imes 2$ matrix such that $Ax=0$ has infinite number of solutions, then ${ m rank}(A)=1.$
Mark 1.00 out	Select one:
of 1.00	🔘 a. False
	● b. True ✓
	The correct answer is: True
Question 19 Correct Mark 1.00 out of 1.00	Let $S=\{egin{pmatrix} a+b+2c\ a+2c\ a+b+2c \end{pmatrix}:a,b\in\mathbb{R}\}.$ Then dimension of S equals
	Select one:
	O a. 1
	O b.0
	○ c.3
	◎ d.2 ✓
	The correct answer is: 2
Question 20 Correct	If A is an $n imes n$ nonsingular matrix, then nullity of $(A)=0$
Mark 1.00 out	Select one:
of 1.00	O a. False
	● b. True ✓
	The correct answer is: True
Question 21	The functions $\sin x, \cos x, \sin(2x)$ in $C^2[0,2\pi]$ are
Mark 0.00 out	Select one:
of 1.00	\bigcirc a. linearly independent
	b. linearly dependent ×

dimension of the subspace $S = \operatorname{Span} \left\{ A_1 = \begin{pmatrix} 0 & 1 \\ 2 & 1 \end{pmatrix}, A_2 \begin{pmatrix} 3 & 1 \\ -1 & 0 \end{pmatrix}, A_3 = \begin{pmatrix} 6 & -1 \\ -8 & -3 \end{pmatrix} \right\}$ is Question 22 Correct Mark 1.00 out of 1.00 Select one: 🔘 a. 0 O b.3 O c.1 d. 2 V The correct answer is: 2Question 23 let A be a 4 imes7-matrix, if the row echelon form of A has 2 nonzero rows, then dim(column space of A) is Correct Select one: Mark 1.00 out of 1.00 🔘 a. 7 Ob.3 ● c.2 ✔ O d. 5 The correct answer is: 2 Question 24 If v_1, v_2, \cdots, v_k are vectors in a vector space V , and Incorrect ${
m Span}(v_1,v_2,\cdots,v_k)={
m Span}(v_1,v_2,\cdots,v_{k-1})$, then v_k can be written as alinear combination of $v_1, v_2, \cdots, v_{k-1}$ Mark 0.00 out of 1.00 Select one: 🔘 a. True 🔍 b. False 🗙 The correct answer is: True Question 25 Let E = [3-x,2+x] , F = [1,x] be ordered bases for P_2 . The transition matrix from E to F is Correct Select one: Mark 1.00 out of 1.00 \bigcirc a. $\begin{pmatrix} 1 & 2 \\ -1 & 3 \end{pmatrix}$ \bigcirc b. $\begin{pmatrix} -1 & 1 \\ 3 & 2 \end{pmatrix}$ \bigcirc c. $\begin{pmatrix} -1 & 1 \\ 2 & 3 \end{pmatrix}$ • d. $\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$

Question **26** Incorrect

Mark 0.00 out of 1.00 Let V be a vector space, $\{v_1, v_2, \ldots v_n\}$ a spanning set for V, and $v \in V$, then the vectors $\{v_1, v_2, \ldots v_n, v\}$ form a spanning set for V.

Select one: a. False × b. True

The correct answer is: True

Question 27 Incorrect Mark 0.00 out of 1.00 Let $E = [2 + x, 1 - x, x^2 + 1]$ be an ordered basis for P_3 . If $p(x) = 3x^2 - 3x$, then the coordinate vector of p(x) with respect to E is

Select one: a. $\begin{pmatrix} 3\\2\\-3 \end{pmatrix}$ x b. $\begin{pmatrix} -2\\1\\3 \end{pmatrix}$ c. $\begin{pmatrix} 2\\-3\\1 \end{pmatrix}$ d. $\begin{pmatrix} -2\\-3\\2 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} -2 \\ 1 \\ 3 \end{pmatrix}$

Question 28 Correct Mark 1.00 out of 1.00

If A is an m imes n-matrix, and columns of A form a spanning set for \mathbb{R}^m , then

Question 29 Correct Mark 1.00 out of 1.00

Let $S = \{f \in C[-1,1] : f ext{ is an odd function } \}$, then S is a subspace of C[-1,1].

Select one: a. False b. True 🗸

Select one:

○ a. n ≤ m○ b. m = n○ c. m = n + 1○ d. m ≤ n

The correct answer is: $m \leq n$

Question 30 Correct Mark 1.00 out of 1.00	 If A is a 4 × 3 matrix such that N(A) = {0}, and b can be written as a linear combination of the columns of A, then Select one: a. The system Ax = b has exactly one solution b. The system Ax = b has infinitely many solutions c. The system Ax = b is inconsistent d. The system Ax = b has exactly two solutions
	The correct answer is: The system $Ax=b$ has exactly one solution
Question 31 Incorrect	The coordinate vector of $6+4x$ with respect to the basis $[2x,2]$ is $(3,2)^T$
Mark 0.00 out of 1.00	Selectione:
	b. True X
	The correct answer is: False
Question 32 Correct	The vectors $\{x+1, x^2+2x+1, x^2+x+1\}$ form a basis for $P_3.$
Mark 1.00 out	Select one:
of 1.00	O a. False
	◎ b. True
	The correct answer is: True
	Jump to Announcements ►

Data retention summary

Dashboard /	My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201-Meta / General / Second Exam
Complete Time t	ed on Sunday, 10 January 2021, 9:47 AM State Finished ed on Sunday, 10 January 2021, 10:33 AM aken 45 mins 22 secs arade 30.00 out of 32.00 (94%)
Question 1 Correct	The vectors $\{x^2+2x+1,x-1,x^2+x+1\}$ form a basis for $P_3.$
Mark 1.00 out of 1.00	Select one: a. False
	● b. True
	The correct answer is: True
Question 2 Correct Mark 1.00 out	Let $E=[2+x,1-x,x^2+1]$ be an ordered basis for $P_3.$ If $p(x)=2x^2-2x+1$, then the coordinate vector of $p(x)$ with respect to E is
of 1.00	Select one: $\begin{pmatrix} -1 \end{pmatrix}$
	• a. $\begin{pmatrix} -1 \\ 1 \\ 2 \end{pmatrix}$
	\bigcirc b. $\begin{pmatrix} 3\\2\\-3 \end{pmatrix}$
	\bigcirc c. $\begin{pmatrix} 2\\ -3\\ 1 \end{pmatrix}$

• c.
$$\begin{pmatrix} -3\\1 \end{pmatrix}$$

• d. $\begin{pmatrix} -2\\-3\\2 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} -1 \\ 1 \\ 2 \end{pmatrix}$

Question 3 Correct	If A is a nonzero $4 imes 2$ -matrix and $Ax=0$ has infinitely many solutions, then ${\sf rank}(A)=$
Mark 1.00 out of 1.00	Select one: a. 4
	• b. 3
	● c.1
	\bigcirc d. 2
	The correct answer is: 1

Question 4	$\begin{pmatrix} 1 & -2 & 1 & 0 \end{pmatrix}$
Correct	If $A=egin{pmatrix} -1 & 2 & 3 & 0 \end{bmatrix}$, then ${ m rank}(A)=3.$
Mark 1.00 out of 1.00	If $A=egin{pmatrix} 1&-2&1&0\ -1&2&3&0\ 2&-1&0&0 \end{pmatrix}$, then ${ m rank}(A)=3.$
	Select one:
	a. True
	O b. False
	The correct answer is: True
Question 5 Correct	Every spanning set for \mathbb{R}^3 contains at least 3 vectors.
Mark 1.00 out	Select one:
of 1.00	 a. False

The correct answer is: True

Question 6 Correct Mark 1.00 out of 1.00

The transition matrix from the standard basis
$$S = \left[e_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}, e_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}\right]$$
 to the ordered basis $U = \left[u_1 = \begin{pmatrix} 1 \\ 3 \end{pmatrix}, u_2 = \begin{pmatrix} 2 \\ 7 \end{pmatrix}\right]$ is

Select one:

• a.
$$T = \begin{pmatrix} 1 & 2 \\ 3 & 7 \end{pmatrix}$$

• b. $T = \begin{pmatrix} 1 & -2 \\ -3 & 7 \end{pmatrix}$
• c. $T = \begin{pmatrix} -7 & 2 \\ 3 & -1 \end{pmatrix}$
• d. $T = \begin{pmatrix} 7 & -2 \\ -3 & 1 \end{pmatrix}$

The correct answer is: $T=egin{pmatrix} 7 & -2 \ -3 & 1 \end{pmatrix}$



```
Correct

Mark 1.00 out

of 1.00
Select one:

a. \operatorname{rank}(A) = 3 - \operatorname{nullity}(A)

b. \operatorname{nullity}(A) = 1

\checkmark

c. \operatorname{nullity}(A) = 3

d. \operatorname{rank}(A) = \operatorname{nullity}(A)
```

The correct answer is: $\operatorname{nullity}(A) = 1$

Question 8 Correct Mark 1.00 out of 1.00	The coordinate vector of $8 + 6x$ with respect to the basis $[2, 2x]$ is $(4, 3)^T$ Select one: a. False b. True \checkmark The correct answer is: True
Question 9 Correct Mark 1.00 out of 1.00	The rank of $A = \begin{pmatrix} 1 & 4 & 1 & 2 & 0 \\ 2 & 6 & -1 & 2 & -1 \\ 3 & 10 & 0 & 4 & 0 \end{pmatrix}$ is Select one: $\bigcirc a. 4$ $\bigcirc b. 1$ $\bigcirc c. 2$ $\bigcirc d. 3$
	The correct answer is: 3
Question 10 Correct Mark 1.00 out of 1.00	 If A is an n × n singular matrix, then Select one: a. N(A) = {0} b. rank(A) = n c. The columns of A are linearly dependent ✓ d. The rows of A are linearly independent
	The correct answer is: The columns of A are linearly dependent
Question 11 Correct Mark 1.00 out of 1.00	If A is an $m \times n$ -matrix, and columns of A are linearly independent, then Select one: @ a. $m = n@ b. n \leq m$

• c. $m \leq m$ • c. $m \leq n$ • d. m = n + 1

The correct answer is: $n \leq m$

Question 12 Correct Mark 1.00 out of 1.00 Let E = [3-x,2+x] , F = [1,x] be ordered bases for P_2 . The transition matrix from E to F is

Select one: a. $\begin{pmatrix} 1 & 2 \\ -1 & 3 \end{pmatrix}$ b. $\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$ c. $\begin{pmatrix} -1 & 1 \\ 2 & 3 \end{pmatrix}$ d. $\begin{pmatrix} -1 & 1 \\ 3 & 2 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$

Question 13 Correct Mark 1.00 out of 1.00 Let $S=\{f\in C[-1,1]: f ext{ is an odd function }\}$, then S is a subspace of C[-1,1].Select one: a. True

🔘 b. False

The correct answer is: True

Question 14 Correct Mark 1.00 out of 1.00 The vectors $\{(1, -1, 1)^T, (1, -1, 2)^T, (1, -1, 1)^T\}$ form a basis for \mathbb{R}^3 . Select one: \bigcirc a. True \bigcirc b. False \checkmark

The correct answer is: False

Question 15If A is a 3×3 -mCorrectSelect one:Mark 1.00 out \circ a. 0 \circ b. 3

If A is a 3 imes 3-matrix, and Ax=0 has only the zero solution, then ${\sf rank}(A)=0$

✓
○ c. 2
○ d. 1

The correct answer is: 3

Incorrect Mark 0.00 out

Question 18

dimension of the subspace
$$S= ext{Span}\left\{A_1=egin{pmatrix}1&1\\2&0\end{pmatrix},A_2egin{pmatrix}0&1\\-1&3\end{pmatrix},A_3=egin{pmatrix}-3&-2\\-8&-2\end{bmatrix}$$

of 1.00

Select one:

 \bigcirc a. 2O b.0 ● c.3 × O d.1

The correct answer is: 2

Question 19
CorrectIf A is an $m \times n$ -matrix, and columns of A form a spanning set for \mathbb{R}^m , thenMark 1.00 out
of 1.00Select one:
 \bullet a. $m \leq n$ \bullet b. $n \leq m$

 \circ b. $n \leq m$ \circ c. m = n \circ d. m = n + 1

The correct answer is: $m \leq n$

Question 20 Correct Mark 1.00 out of 1.00

Let
$$E=[2+x,1-x,x^2+1]$$
 be an ordered basis for $P_3.$ If $[p(x)]_E=egin{pmatrix}1\\-1\\3\end{pmatrix}$, then

Select one:

• a.
$$p(x) = 3x^2 + 2x + 4$$

• b. $p(x) = x^2 - x + 3$
• c. $p(x) = 3x^2 + 2x + 5$
• d. $p(x) = 3x^2 + x - 3$

The correct answer is: $p(x) = 3x^2 + 2x + 4$

Question 21 Correct Mark 1.00 out of 1.00

If $\{v_1, v_2, v_3, v_4\}$ is a basis for a vector space V , then the set $\{v_1, v_2, v_3\}$ is

Select one:

 \checkmark

- a. linearly dependent and a spanning set
- \bigcirc b. linearly independent and a spanning set for V.
- \bigcirc c. linearly dependent and not a spanning set for V.
- ${igle}$ d. linearly independent and not a spanning set for V.

The correct answer is: linearly independent and not a spanning set for V.

Incorrect

Mark 0.00 out of 1.00 Select one: a. True ×

🔘 b. False

The correct answer is: False

Question 23 Correct	Let V be a vector space, $\{v_1,v_2,\ldots v_n\}$ a spanning set for V , and $v\in V$, then the vectors $\{v_1,v_2,\ldots v_n,v\}$ form a spanning set for V .
Mark 1.00 out of 1.00	Select one:
	 a. False
	b. True
	The correct answer is: True
Question 24 Correct	Every linearly independent set of vectors in \mathbb{R}^4 has exactly 4 vectors.
Mark 1.00 out	Select one:
of 1.00	a. False
	O b. True
	The correct answer is: False
Question 25 Correct	If A is an $n imes n$ -matrix and for each $b\in \mathbb{R}^n$ the system $Ax=b$ has a unique solution, then
Mark 1.00 out	Select one:
of 1.00	\bigcirc a. rank $(A)=n-1$
	\odot b. A is nonsingular
	\bigcirc c. nullity $(A)=1$
	\bigcirc d. A is singular
	The correct answer is: A is nonsingular
Question 26 Correct	Let $S=\{inom{x}{y}\in \mathbb{R}^2: x=1-y\}$, then S is a subspace of $\mathbb{R}^2.$
Mark 1.00 out	

Select one:

🔍 a. True

🔍 b. False 🗸

The correct answer is: False

Question 27 Correct Mark 1.00 out of 1.00

of 1.00

If A is a 4 imes 3 matrix such that $N(A)=\{0\}$, and b can be written as a linear combination of the columns of A , then

Select one:

 \checkmark

- \odot a. The system Ax=b has exactly two solutions
- \odot b. The system Ax=b has exactly one solution
- $\odot\,$ c. The system Ax=b has infinitely many solutions
- \bigcirc d. The system Ax=b is inconsistent

The correct answer is: The system Ax = b has exactly one solution

https://itc.birzeit.edu/mod/quiz/review.php?attempt=377583&cmid=176312

Question 28	Let A be a $4 imes 3$ -matrix with nullity $(A)=0$. Then $rank(A)=1$
Correct Mark 1.00 out	Select one:
of 1.00	a. True
	b. False
	The correct answer is: False
Question 29 Correct	If the columns of $A_{n imes n}$ are linearly independent and $b\in \mathbb{R}^n$, then the system $Ax=b$ is inconsistent.
Mark 1.00 out	Select one:
of 1.00	a. False
	O b. True
	The correct answer is: False
Question 30 Correct	Let V be a vector space of dimension 4 and $W=\{v_1,v_2,v_3,v_4,v_5\}$ a set of nonzero vectors of V , the
Mark 1.00 out	Select one:
of 1.00	\bigcirc a. W is a basis
	\bigcirc b. W is linearly independent
	\bigcirc c. W is a spanning set
	 d. W is linearly dependent
	The correct answer is: W is linearly dependent
Question 31 Correct	If A is a $3 imes 5$ -matrix, rows of A are linearly independent, then
Mark 1.00 out	Select one:
of 1.00	
	\bigcirc b. rank $(A)=$ nullity $(A)+3$
	\bigcirc c. rank $(A)=$ nullity (A)
	\bigcirc d. rank $(A)=$ nullity $(A)+2$

The correct answer is: $\mathrm{rank}(A) = \mathrm{nullity}(A) + 1$

Question **32** Correct Mark 1.00 out of 1.00 If $v_1,v_2,\cdots,v_n\in V$, dim(V)=n and v_1,v_2,\cdots,v_n are linearly independent, then Span $(v_1,v_2,\cdots,v_n)=V$, .

Select one:

🔘 a. True 🗸

🔘 b. False

The correct answer is: True

Jump to...

Announcements ►

Data retention summary

	ed on Sunday, 10 January 2021, 9:46 AM State Finished			
Complete	ed on Sunday, 10 January 2021, 11:01 AM			
	aken 1 hour 15 mins			
G	rade 25.00 out of 32.00 (78%)			
Question 1 Correct	If $\{v_1, v_2, v_3, v_4\}$ is a basis for a vector space V , then the set $\{v_1, v_2, v_3\}$ is			
Mark 1.00 out	Select one:			
of 1.00	\bigcirc a. linearly dependent and not a spanning set for $V.$			
	 b. linearly independent and not a spanning set for V. 			
	\odot c. linearly independent and a spanning set for $V.$			
	 d. linearly dependent and a spanning set 			
Question 2	If A is a $3 imes 5$ -matrix, rows of A are linearly independent, then			
Correct				
	If A is a $3 imes 5$ -matrix, rows of A are linearly independent, then Select one: \odot a. rank $(A)=$ nullity $(A)+2$			
Correct Mark 1.00 out	Select one:			
Correct Mark 1.00 out	Select one: \bigcirc a. rank $(A)=$ nullity $(A)+2$			
Correct Mark 1.00 out	Select one: \bigcirc a. rank (A) = nullity (A) + 2 \bigcirc b. rank (A) = nullity (A)			
Correct Mark 1.00 out	Select one: a. rank $(A) = \operatorname{nullity}(A) + 2$ b. rank $(A) = \operatorname{nullity}(A)$ c. rank $(A) = \operatorname{nullity}(A) + 3$			
Correct Mark 1.00 out	Select one: a. rank $(A) = \text{nullity}(A) + 2$ b. rank $(A) = \text{nullity}(A)$ c. rank $(A) = \text{nullity}(A) + 3$ d. rank $(A) = \text{nullity}(A) + 1$			
Correct Mark 1.00 out	Select one: a. rank (A) = nullity (A) + 2 b. rank (A) = nullity (A) c. rank (A) = nullity (A) + 3 d. rank (A) = nullity (A) + 1 \checkmark			
Correct Mark 1.00 out of 1.00	Select one: a. rank $(A) = nullity(A) + 2$ b. rank $(A) = nullity(A)$ c. rank $(A) = nullity(A) + 3$ d. rank $(A) = nullity(A) + 1$ The correct answer is: rank $(A) = nullity(A) + 1$			
Correct Mark 1.00 out of 1.00	Select one: a. rank $(A) = nullity(A) + 2$ b. rank $(A) = nullity(A)$ c. rank $(A) = nullity(A) + 3$ d. rank $(A) = nullity(A) + 1$ The correct answer is: rank $(A) = nullity(A) + 1$ If A is a 3×2 matrix, then			



 \checkmark

 $\odot\,$ d. The columns of A are linearly dependent

The correct answer is: The rows of ${\boldsymbol{A}}$ are linearly dependent

Question 4 Incorrect Mark 0.00 out of 1.00 The coordinate vector of 6+4x with respect to the basis $\left[2x,2
ight]$ is $\left(3,2
ight)^T$

Select one: a. True 🗙

🔘 b. False

Second Exam: Attempt review

The correct answer is: False

Question 5 Correct Mark 1.00 out of 1.00	The rank of $A=egin{pmatrix} 1&4&1&2&2\\ 2&6&-1&2&1\\ 3&10&0&4&3 \end{pmatrix}$ is
	Select one:
	O a. 3
	O b.1
	• c.2
	O d. 4
	The correct answer is: 2
Question 6 Correct	$\begin{pmatrix} -1 & -2 & -1 & 0 \\ -1 & -2 & -1 & 0 \end{pmatrix}$
Mark 1.00 out	If $A=egin{pmatrix} -1 & -2 & -1 & 0 \ 1 & 2 & 2 & 0 \ -2 & -4 & 0 & 0 \end{pmatrix}$, then rank $(A)=3.$
of 1.00	(-2 -4 0 0)
	Select one:
	O a. True
	b. False
	The correct answer is: False
Question 7	
Correct	The vectors $\{-x+1,2x^2+3x+3,x^2+x+2\}$ form a basis for $P_3.$
Mark 1.00 out	Select one:
of 1.00	a. False
	O b. True
	The correct answer is: False
Question 8	Let V be a vector space, $v_1, v_2, \ldots v_n \in V$ be linearly independent, and $v \in V$, then the vectors
Correct Mark 1.00 out	$v_1, v_2, \ldots v_n, v$ are linearly independent.
of 1.00	Select one:
	🔘 a. True
	b. False

The correct answer is: False

1/11/2021

	Question 9 Correct	dimension of the subspace $S= ext{Span}\left\{A_1=egin{pmatrix}0&1\\2&1\end{pmatrix},A_2egin{pmatrix}3&1\\-1&0\end{pmatrix},A_3=egin{pmatrix}6&-1\\-8&-3\end{pmatrix} ight\}$ is
	Mark 1.00 out of 1.00	Select one:
		O a.1
		\bigcirc b. 3
		• c. 2
		O d. 0
		The correct answer is: 2
	Question 10 Incorrect	If $T_{n imes n}$ is a transition matrix between two bases for a vector space V , $\dim(V)=n>0$, then
	Mark 0.00 out	Select one:
	of 1.00	\odot a. rank $(T)=1$
		×
		\bigcirc b. det $(T)=1$
		$^{\bigcirc}$ c. nullity $(T)=n$
		\bigcirc d. T is nonsingular
		The correct answer is: T is nonsingular
	Question 11 Correct	Let $S=\{f\in C\left[-1,1 ight]:f\left(-1 ight)=f\left(1 ight)\}$, then S is a subspace of $C\left[-1,1 ight].$
Mark 1.00 out		Select one:
	of 1.00	a. True
		O b. False
		The correct answer is: True
	Question 12 Correct	Let A be a $4 imes 6$ matrix, and nullity $(A)=2$, then the system $Ax=b$ has infinite number of solutions for every $b\in \mathbb{R}^4.$
	Mark 1.00 out of 1.00	Select one:
		Interview ■ a. True ▼



The correct answer is: True

Question **13** Correct

Mark 1.00 out of 1.00

Let $S=\{inom{x}{y}ig)\in \mathbb{R}^2: x=1-y\}$, then S is a subspace of $\mathbb{R}^2.$

Select one:

🔘 a. True

🔘 b. False 🗸

The correct answer is: False

https://itc.birzeit.edu/mod/quiz/review.php?attempt=377561&cmid=176312

Question 14 Correct	$\dimig(ext{span}(x^2,3+x^2,x^2+1)ig)$ is
Mark 1.00 out	Select one:
of 1.00	O a.1
	O b.0
	O c. 3
	d. 2
	\checkmark
	The correct answer is: 2
Question 15 Correct	If $v_1,v_2,\cdots,v_n\in V$, dim $(V)=n$ and v_1,v_2,\cdots,v_n are linearly independent, then Span $(v_1,v_2,\cdots,v_n)=V$, .
Mark 1.00 out of 1.00	Select one:
	 a. False
	b. True
	The correct answer is: True
Question 16 Correct	let A be a $3 imes 5$ -matrix, if the row echelon form of A has 1 nonzero row, then dim(column space of A
Mark 1.00 out	Select one:
of 1.00	O a. 2
	• b.0
	• c. 3
	◎ d.1
	The correct answer is: 1
Question 17 Incorrect	If $f_1,f_2,\cdots,f_n\in C^{n-1}\left[a,b ight]$ and $W\left[f_1,f_2,\cdots,f_n ight](x_0)=0$ for some $x_0\in [a,b]$, then f_1,f_2,\cdots,f_n linearly dependent.
Mark 0.00 out of 1.00	Select one:

The correct answer is: False

🔘 b. True 🗙

Question 18 Incorrect Mark 0.00 out of 1.00 Let E=[3-x,2+x] , F=[1,x] be ordered bases for $P_2.$ The transition matrix from E to F is

• a. $\begin{pmatrix} -1 & 1 \\ 3 & 2 \end{pmatrix}$ • b. $\begin{pmatrix} 1 & 2 \\ -1 & 3 \end{pmatrix}$ • c. $\begin{pmatrix} -1 & 1 \\ 2 & 3 \end{pmatrix}$ **x** • d. $\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$

Select one:

The correct answer is: $\begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$

Question 19 Correct Mark 1.00 out of 1.00 Let $E = [2 + x, 1 - x, x^2 + 1]$ be an ordered basis for P_3 . If $p(x) = -3x^2 + x + 5$, then the coordinate vector of p(x) with respect to E is

Select one:

• a.
$$\begin{pmatrix} 3 \\ -3 \\ 2 \end{pmatrix}$$

• b. $\begin{pmatrix} 3 \\ 5 \\ 4 \end{pmatrix}$
• c. $\begin{pmatrix} 2 \\ -3 \\ 3 \end{pmatrix}$
• d. $\begin{pmatrix} 3 \\ 2 \\ -3 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 3\\2\\-3 \end{pmatrix}$

Question 20 Incorrect Mark 0.00 out of 1.00

The transition matrix from the standard basis
$$S = \left[e_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}, e_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}\right]$$
 to the ordered basis $U = \left[u_1 = \begin{pmatrix} 2 \\ 3 \end{pmatrix}, u_2 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}\right]$ is

Select one:

• a.
$$T = \begin{pmatrix} 2 & -1 \\ -3 & 2 \end{pmatrix}$$

• b. $T = \begin{pmatrix} 2 & 3 \\ 1 & 2 \end{pmatrix}$
• c. $T = \begin{pmatrix} 2 & 1 \\ 3 & 2 \end{pmatrix}$
×
• d. $T = \begin{pmatrix} -2 & 1 \\ 3 & -2 \end{pmatrix}$

The correct answer is: $T=egin{pmatrix} 2&-1\-3&2 \end{pmatrix}$

Question 21 Correct Mark 1.00 out of 1.00

The coordinate vector of
$$\begin{pmatrix} -3 \\ -2 \\ -5 \end{pmatrix}$$
 with respect to the ordered basis $\begin{bmatrix} 1 \\ 1 \\ 1 \end{pmatrix}, \begin{pmatrix} 1 \\ 2 \\ 2 \end{pmatrix}, \begin{pmatrix} 2 \\ 3 \\ 4 \end{pmatrix}$] is

Select one:

• a.
$$\begin{pmatrix} 1\\2\\3 \end{pmatrix}$$

• b. $\begin{pmatrix} 3\\2\\5 \end{pmatrix}$
• c. $\begin{pmatrix} 1\\-4\\3 \end{pmatrix}$
• d. $\begin{pmatrix} -1\\4\\-3 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} -1 \\ 4 \\ 2 \end{pmatrix}$

$\left(-3 \right)$

Question 22 Correct Mark 1.00 out of 1.00

If two nonzero vectors in a vector space V are linearly dependent, then each of them is a scalar multiple of the other.

Select one:

🔘 a. True 🗸

🔘 b. False

The correct answer is: True

Question 23 Incorrect	Which of the following is not a basis for the corresponding space
Mark 0.00 out of 1.00	Select one: $\textcircled{\ }$ a. $\{x+4,1-x^2,x^2+x+3\}$; P_3
	\bigcirc b. $\{(1,1)^T,(2,-3)^T\}$; \mathbb{R}^2
	• c. $\{5-x, x-1\}$; P_2
	• d. $\{(-2, -1, -1)^T, (-3, -3, 0)^T, (2, 0, 2)^T\}$; \mathbb{R}^3
	The correct answer is: $\left\{ \left(-2,-1,-1 ight)^{T},\left(-3,-3,0 ight)^{T},\left(2,0,2 ight)^{T} ight\} ;\mathbb{R}^{3}$
Question 24 Correct	If v_1,v_2,\cdots,v_k are vectors in a vector space V , and Span $(v_1,v_2,\cdots,v_k)=$ Span (v_1,v_2,\cdots,v_{k-1}) , then v_k can be written as alinear combination of
Mark 1.00 out of 1.00	span (v_1, v_2, \cdots, v_k) = span $(v_1, v_2, \cdots, v_{k-1})$, then v_k can be written as almedi combination of $v_1, v_2, \cdots, v_{k-1}$
	Select one: ◎ a. True ✔
	 b. False
	The correct answer is: True
Question 25 Correct	If A is an $m imes n$ -matrix, and columns of A are linearly independent, then
Mark 1.00 out	Select one:
of 1.00	\bigcirc a. $m=n$
	${}$ b. $m=n+1$
	\circ c. $m \leq n$ \circ d. $n \leq m$
	The correct answer is: $n \leq m$
Question 26 Correct	Let A be a $5 imes 4$ matrix, and rank $(A)=4$
Mark 1.00 out	Select one:
of 1.00	\bigcirc a. A has a row of zeros

 ${\ensuremath{\,{\circ}}}$ b. The columns of A are linearly independent

$^{\bigcirc}\,$ c. nullity(A)=1

 \checkmark

 $\odot\,$ d. The rows of A are linearly independent

The correct answer is: The columns of A are linearly independent

Question 27	If A is a nonzero $4 imes 2$ -matrix and $Ax=0$ has infinitely many solutions, then $rank(A)=$				
Mark 0.00 out	Select one:				
of 1.00	• a. 2				
	×				
	0 b.4				
	• c. 3				
	O d.1				
	The correct answer is: 1				
Question 28 Correct	If A is a $4 imes 3$ matrix with rank $(A)=3$, then the homogeneous system $Ax=0$ has a nontrivial solution.				
Mark 1.00 out	Select one:				
of 1.00	a. False				
	O b. True				
	The correct answer is: False				
Question 29 Correct	let A be a $4 imes 7$ -matrix, if the row echelon form of A has 2 nonzero rows, then dim(column space of A)				
Mark 1.00 out	Select one:				
of 1.00	• a.7				
	O b.5				
	© c. 2 ✓				
	O d. 3				
	The correct answer is: 2				
Question 30	The functions $\sin x, \cos x, \sin \left(2x ight)$ in $C^2 \left[0, 2\pi ight]$ are				
Correct					
Correct Mark 1.00 out	Select one:				
	Select one: a. linearly dependent				

The correct answer is: linearly independent

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Question **31**

Correct	
Mark 1.00 out	
of 1.00	

The correct answer is: 0

Select one:

igcolor a. 1

O b.3

O c.2

◎ d.0 ✓ 1/11/2021

Question 32 Correct	The vectors $\left\{ \left(1,-1,-4 ight)^T, \left(1,-1,1 ight)^T, \left(1,-1,2 ight)^T ight\}$ form a basis for $\mathbb{R}^3.$	
Mark 1.00 out of 1.00	Select one: ◎ a. False ✔	
	O b. True	
	The correct answer is: False	
	Jump to	Announcements ►

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201-Meta / General / Second Exam



Question 1 Correct Mark 1.00 out of 1.00 Let E = [2 + x, 3 - x] , F = [1, x] be ordered bases for P_2 . The transition matrix from E to F is

Selectione: a. $\begin{pmatrix} 2 & 1 \\ 3 & -1 \end{pmatrix}$ b. $\begin{pmatrix} 1 & -1 \\ 3 & 2 \end{pmatrix}$ c. $\begin{pmatrix} 1 & -1 \\ 2 & 3 \end{pmatrix}$

• c. $\begin{pmatrix} 1 & -1 \\ 2 & 3 \end{pmatrix}$ • d. $\begin{pmatrix} 2 & 3 \\ 1 & -1 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 2 & 3 \\ 1 & -1 \end{pmatrix}$

Question **2**

Incorrect Mark 0.00 out of 1.00 Let A be a 4 imes 5-matrix, with rank(A) = 3. Then The rows of A are linearly dependent.

Select one: a. True b. False ×

The correct answer is: True

Question 3

Correct Mark 1.00 out of 1.00 Let V be a vector space of dimension 4 and $W=\{v_1,v_2,v_3,v_4,v_5\}$ a set of nonzero vectors of V, then

Select one:

 \checkmark

In the second secon

 \bigcirc b. W is a basis

 \bigcirc c. W is a spanning set

 \bigcirc d. W is linearly independent

The correct answer is: W is linearly dependent

Question 4 Correct	Let $S=iggl\{p(x)=ax^2+bx+c\in P_3: \int\limits_0^1 p(x)\ dx=0iggr\}.$ The dimension of S is.
Mark 1.00 out of 1.00	Select one:
	 b. 3
	◎ c.2
	O d. 4
	The correct answer is: 2
Question 5 Correct	The vectors $\{(1,-1,1)^T,(1,-3,2)^T,(1,-2,0)^T\}$ form a basis for $\mathbb{R}^3.$
Mark 1.00 out	Select one:
of 1.00	 a. False
	● b. True ✓
	The correct answer is: True
Question 6 Correct	Let $S=\{f\in C[-1,1]: f ext{ is an odd function }\}$, then S is a subspace of $C[-1,1].$
Mark 1.00 out	Select one:
of 1.00	a. True
	O b. False
	The correct answer is: True
Question 7 Correct	
	The correct answer is: True Let A be a $2 imes 4$ matrix, and rank $(A)=2$, then, the columns of A form a spanning set for ${\mathbb R}$ Select one:
Correct	Let A be a $2 imes 4$ matrix, and rank $(A)=2$, then, the columns of A form a spanning set for ${\mathbb R}$

Question 8

Correct Mark 1.00 out of 1.00

Select one: a. 7

b. 2
c. 3
d. 5

The correct answer is: 2

let A be a 4 imes 7-matrix, if the row echelon form of A has 2 nonzero rows, then dim(column space of A) is

Question 9	If A is a $3 imes 3$ -matrix, and $Ax=0$ has only the zero solution, then $nullity(A)=$
Mark 0.00 out	Select one:
of 1.00	
	 b. 3
	× 0.5
	O c. 2
	O d.1
	The correct answer is: 0
Question 10 Incorrect	If A is a nonzero $4 imes 2$ -matrix and $Ax=0$ has infinitely many solutions, then ${\sf rank}(A)=$
Mark 0.00 out	Select one:
of 1.00	0 a.4
	b. 2
	×
	O c.1
	O d. 3
	The correct answer is: 1
Question 11 Correct	If A is an $n imes n$ singular matrix, then
Mark 1.00 out	Select one:
of 1.00	\odot a. The rows of A are linearly independent
	\bigcirc b. $N(A)=\{0\}$
	 c. The columns of A are linearly dependent
	\bigcirc d. rank $(A)=n$

Question 12 Correct

Mark 1.00 out of 1.00 The vectors $\{x^2+2x+1,x-1,x^2+x+1\}$ form a basis for $P_3.$

🔍 a. False

Select one:

🔍 b. True 🗸

The correct answer is: True

Question 13 Incorrect	Let $S=\{egin{pmatrix} a+b+2c\ a+2c\ a+b+2c \end{pmatrix}:a,b\in\mathbb{R}\}.$ Then dimension of S equals
Mark 0.00 out of 1.00	$\left(a+b+2c\right)$
	Select one:
	0 a.1
	 b. 3 ×
	O c. 2
	O d. 0
	The correct answer is: 2
Question 14 Correct Mark 1.00 out	dimension of the subspace $S= ext{Span}\left\{A_1=egin{pmatrix}1&2\\1&0\end{pmatrix},A_2egin{pmatrix}0&-1\\1&3\end{pmatrix},A_3=egin{pmatrix}-3&-8\\-1&6\end{pmatrix} ight\}$ is
of 1.00	Select one:
	O a. 3
	b. 2
	○ c. 0
	O d.1
	The correct answer is: 2
Question 15 Correct	If A is an $n imes n$ -matrix and for each $b\in \mathbb{R}^n$ the system $Ax=b$ has a unique solution, then
Mark 1.00 out	Select one:
of 1.00	\bigcirc a. A is singular
	 b. A is nonsingular
	\bigcirc c. rank $(A)=n-1$

The correct answer is: A is nonsingular

Mark 1.00 out

Correct

of 1.00

Let A be a 4 imes 3 matrix, and $\operatorname{nullity}(A)=0$, then

Select one:

 \checkmark

- $\odot\,$ a. The rows of A are linearly independent
- \bigcirc b. the columns of A form a basis for \mathbb{R}^4
- \bigcirc c. rank(A)=1
- \odot d. The columns of A are linearly independent

The correct answer is: The columns of A are linearly independent

2021/1/10

Question 17 Correct	Let A be a $4 imes 6$ matrix, and nullity $(A)=2$, then the system $Ax=b$ has infinite number of solutions for ever $b\in \mathbb{R}^4.$
Mark 1.00 out of 1.00	Solactions
	Select one: ◎ a. True ✔
	 b. False
	O D. Taise
	The correct answer is: True
Question 18 Correct	Let V be a vector space, $v_1,v_2,\ldots v_n\in V$ be linearly independent, and $v\in V$, then the vectors $v_1,v_2,\ldots v_n,v$ are linearly independent.
Mark 1.00 out of 1.00	Select one:
	a. False
	O b. True
	The correct answer is: False
Question 19 Correct	Let v_1,v_2 be linearly dependent in a vector space V , $V=$ Span (v_1,v_2) , then dim $(V)=2$
Mark 1.00 out	Select one:
of 1.00	🔍 a. True
	b. False
	The correct answer is: False
Question 20 Correct	$\dimig(ext{span}(x^2,3+x^2,x^2+1)ig)$ is
Mark 1.00 out	Select one:
of 1.00	O a. 3
	O b.0
	◎ c.2

Question 21 Incorrect Mark 0.00 out of 1.00

```
If T_{n \times n} is a transition matrix between two bases for a vector space V, \dim(V) = n > 0, then
Select one:

• a. rank(T) = 1

• b. nullity(T) = n

• c. T is nonsingular

• d. \det(T) = 1
```

The correct answer is: T is nonsingular

Question 22 Incorrect Mark 0.00 out of 1.00

If A is a 3 imes 2 matrix, then

Select one:

×

- \bigcirc a. The columns of A are linearly independent
- ${\ensuremath{\,\overline{}}}$ b. The columns of A are linearly dependent
- \bigcirc c. The rows of A are linearly dependent
- \bigcirc d. Rank(A)=3

The correct answer is: The rows of A are linearly dependent

Question 23 Correct Mark 1.00 out of 1.00

The transition matrix from the standard basis
$$S = \left[e_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}, e_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}\right]$$
 to the ordered basis $U = \left[u_1 = \begin{pmatrix} 2 \\ 3 \end{pmatrix}, u_2 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}\right]$ is

Select one:

• a.
$$T = \begin{pmatrix} 2 & 1 \\ 3 & 2 \end{pmatrix}$$

• b. $T = \begin{pmatrix} 2 & -1 \\ -3 & 2 \end{pmatrix}$
• c. $T = \begin{pmatrix} -2 & 1 \\ 3 & -2 \end{pmatrix}$
• d. $T = \begin{pmatrix} 2 & 3 \\ 1 & 2 \end{pmatrix}$

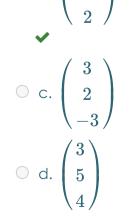
The correct answer is:
$$T=egin{pmatrix} 2&-1\-3&2 \end{pmatrix}$$

Question 24 Correct Mark 1.00 out of 1.00 Let $E = [2 + x, 1 - x, x^2 + 1]$ be an ordered basis for P_3 . If $p(x) = 2x^2 + 6x + 5$, then the coordinate vector of p(x) with respect to E is

Select one: $\begin{pmatrix} 2 \end{pmatrix}$

• a.
$$\begin{pmatrix} 2\\ -3\\ 3 \end{pmatrix}$$

• b. $\begin{pmatrix} 3\\ -3 \end{pmatrix}$

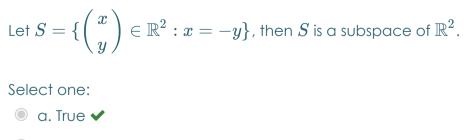


The correct answer is: $\begin{pmatrix} 3\\ -3\\ 2 \end{pmatrix}$

Question 25 Correct	Let A be a $3 imes 5$ matrix, and nullity $(A)=3$, then the rows of A are linearly independent
Mark 1.00 out	Select one:
of 1.00	a. False
	O b. True
	The correct answer is: False
Question 26 Correct	if $\{v_1, v_2, \cdots, v_k\}$ is a spanning set for $\mathbb{R}^{3 imes 2}$, then
Mark 1.00 out	Select one:
of 1.00	\bigcirc a. $k=6$
	\bigcirc b. $k>6$
	◎ c. $k \ge 6$
	\bigcirc d. $k\leq 6$
	The correct answer is: $k\geq 6$
Question 27 Correct Mark 1.00 out of 1.00	If $A=egin{pmatrix} 1&2&-1&0\ -1&-2&2&0\ 2&4&0&0 \end{pmatrix}$, then ${\sf rank}(A)=3.$
011.00	Select one:
	O a. True
	b. False
	The correct answer is: False
Question 28 Incorrect	If A is an $m imes n$ -matrix, $m eq n$, then either the rows or the columns of A are linearly independe
Mark 0.00 out	Select one:
of 1.00	 a. False
	b. True ×

Correct

Mark 1.00 out of 1.00



🔘 b. False

The correct answer is: True

Question 30 Correct	The coordinate vector of $8+6x$ with respect to the basis $[2,2x]$ is $(4,3)^T$
Mark 1.00 out	Select one:
of 1.00	 a. False
	b. True
	The correct answer is: True
Question 31 Correct	If $\{v_1,v_2,v_3,v_4\}$ is a basis for a vector space V , then the set $\{v_1,v_2,v_3\}$ is
Mark 1.00 out	Select one:
of 1.00	\bigcirc a. linearly independent and a spanning set for $V.$
	 b. linearly independent and not a spanning set for V.
	\odot c. linearly dependent and not a spanning set for $V.$
	 d. linearly dependent and a spanning set
	The correct answer is: linearly independent and not a spanning set for $V.$
Question 32 Correct Mark 1.00 out of 1.00	The nullity of $A=egin{pmatrix} 1&4&1&2&1\\ 0&6&-1&2&-1\\ 3&10&0&4&1 \end{pmatrix}$ is
	Select one:
	a. 2

b.1
c.3
d.4

The correct answer is: 2

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Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201-Meta / General / Second Exam

Started on	Sunday, 10 January 2021, 9:46 AM
State	Finished
Completed on	Sunday, 10 January 2021, 11:01 AM
Time taken 1 hour 14 mins	
Grade	23.00 out of 32.00 (72 %)

\sim			
(.))	IDCT	ion I	
Q (5631		

Correct Mark 1.00 out of 1.00 If A is an n imes n singular matrix, then

Select one:

- \odot a. The columns of A are linearly dependent
- ↓ \bigcirc b. $N(A) = \{0\}$
- ${}^{\bigcirc}$ c. rank(A)=n
- $\odot\,$ d. The rows of A are linearly independent

The correct answer is: The columns of A are linearly dependent

Question 2		
Correct		
Mark 1.00 out of 1.00		

	(1)	4	1	2	$1 \rangle$	
The rank of $A=% {\displaystyle\int} {\displaystyle\int} {\displaystyle\int} {\displaystyle\int} {\displaystyle\int} {\displaystyle\int} {\displaystyle\int} {\displaystyle\int}$	0	6	-1	2	-1	is
	$\setminus 3$	10	0	4	1 /	

Select one:

a.1
b.2
c.4
d.3

The correct answer is: 3

Question **3** Incorrect

Mark 0.00 out

If A is an m imes n-matrix, and columns of A are linearly independent, then

Select one:

of 1.00

\odot a. $n \leq m$

○ b.m = n○ c. $m \le n$ × ○ d.m = n + 1

The correct answer is: $n \leq m$

https://itc.birzeit.edu/mod/quiz/review.php?attempt=377557&cmid=176312#question-438532-26

1/10/2021

Correct	If $v_1,v_2,\cdots,v_n\in V$, dim $(V)=n$ and v_1,v_2,\cdots,v_n are linearly independent , then Span $(v_1,v_2,\cdots,v_n)=V$, .
Mark 1.00 out	
of 1.00	Select one:
	 a. False
	● b. True ✓
	The correct answer is: True
Question 5 Correct	If A is a $4 imes 3$ matrix such that $N(A)=\{0\}$, and b can be written as a linear combination of the columns of A , then
Mark 1.00 out of 1.00	Select one:
	 a. The system $Ax = b$ has exactly one solution
	\odot b. The system $Ax=b$ has exactly two solutions
	\odot c. The system $Ax=b$ is inconsistent
	\bigcirc d. The system $Ax=b$ has infinitely many solutions
	The correct answer is: The system $Ax=b$ has exactly one solution
Question 6 Correct	Let A be a $3 imes 5$ matrix, and nullity $(A)=2$, then the columns of A form a aspanning set for \mathbb{R}^3
	Let A be a $3 imes 5$ matrix, and nullity $(A)=2$, then the columns of A form a aspanning set for \mathbb{R}^3 Select one:
Correct	
Correct Mark 1.00 out	Select one:
Correct Mark 1.00 out	Select one: a. False
Correct Mark 1.00 out of 1.00	Select one: a. False b. True ✓ The correct answer is: True
Correct Mark 1.00 out	Select one: a. False b. True ✓ The correct answer is: True
Correct Mark 1.00 out of 1.00 Question 7 Incorrect Mark 0.00 out	Select one: \bigcirc a. False \textcircled{o} b. True \checkmark The correct answer is: True Let V be a vector space, $v_1, v_2, \ldots v_n \in V$ be linearly independent, and $v \in V$, then the vector $v_1, v_2, \ldots v_n, v$ are linearly independent.
Correct Mark 1.00 out of 1.00 Question 7 Incorrect	Select one: \bigcirc a. False \textcircled{o} b. True \checkmark The correct answer is: True Let V be a vector space, $v_1, v_2, \ldots v_n \in V$ be linearly independent, and $v \in V$, then the vector

The correct answer is: False

Question 8 Correct	If $\{v_1, v_2, v_3, v_4\}$ is a basis for a vector space V , then the set $\{v_1, v_2, v_3\}$ is
Mark 1.00 out of 1.00	Select one: a. linearly dependent and a spanning set
	\odot b. linearly independent and a spanning set for $V.$
	$ \odot $ c. linearly dependent and not a spanning set for $V.$
	 d. linearly independent and not a spanning set for V.
	The correct answer is: linearly independent and not a spanning set for $V.$

Question 9 Correct Mark 1.00 out of 1.00

Let
$$S=\{egin{pmatrix} a+b+2c\ a+2c\ a+b+2c \end{pmatrix}:a,b\in\mathbb{R}\}.$$
 Then dimension of S equals

Select one:

a. 3
b. 0
c. 1
d. 2

The correct answer is: 2

Question 10

Correct Mark 1.00 out of 1.00 If A is an m imes n-matrix, and columns of A form a spanning set for \mathbb{R}^m , then

Select one: \bigcirc a. $n \leq m$ \bigcirc b. m = n + 1

• c.
$$m \le n$$

• d. $m = n$

Question 11

Correct

Mark 1.00 out of 1.00 If $T_{n imes n}$ is a transition matrix between two bases for a vector space V, $\dim(V)=n>0$, then

Select one:

- \bigcirc a. nullity(T)=n
- ${\ensuremath{\, \circ \, }}$ b. T is nonsingular

✓

 \bigcirc c. rank(T) = 1 \bigcirc d. det(T) = 1

The correct answer is: T is nonsingular

1/10/2021

Question 12 Correct	If the columns of $A_{n imes n}$ are linearly independent and $b\in \mathbb{R}^n$, then the system $Ax=b$ has
Mark 1.00 out	Select one:
of 1.00	In a exactly one solution \checkmark
	 b. infinitely many solutions
	 c. no solution
	 d. exactly 2 solutions
	The correct answer is: exactly one solution
Question 13 Incorrect	Let $S=\{f\in C[-1,1]:f(-1)=f(1)\}$, then S is a subspace of $C[-1,1].$
Mark 0.00 out	Select one:
of 1.00	a. False ×
	O b. True
	The correct answer is: True
Question 14 Correct	If A is a $3 imes 5$ -matrix, rows of A are linearly independent, then
Mark 1.00 out	Select one:
of 1.00	${}^{igodoldsymbol{\circ}}$ a. rank $(A)=$ nullity $(A)+3$
	${}^{igodoldsymbol{\circ}}$ b. rank $(A)=$ nullity $(A)+2$
	• c. $\operatorname{rank}(A) = \operatorname{nullity}(A) + 1$
	${}$ d. rank $(A)={}$ nullity (A)
	The correct answer is: ${\sf rank}(A)={\sf nullity}(A)+1$
Question 15 Correct Mark 1.00 out of 1.00	If $A=egin{pmatrix} 1 & -2 & -1 & 0\ -1 & 2 & 2 & 0\ 2 & -4 & 0 & 0 \end{pmatrix}$, then rank $(A)=3.$

Select one:

🔍 a. True

🔘 b. False 🗸

The correct answer is: False

1/10/2021

Question 16 Incorrect Mark 0.00 out	Let $S=\{inom{x}{y}\in \mathbb{R}^2: x+y=0\}$, then S is a subspace of $\mathbb{R}^2.$
of 1.00	Select one:
	a. False ×
	O b. True
	The correct answer is: True
Question 17 Incorrect	The vectors $\{x-1,2x^2+x+5,x^2+x+2\}$ form a basis for $P_3.$
Mark 0.00 out	Select one:
of 1.00	a. True ×
	 b. False
	The correct answer is: False
Question 18 Correct	Every spanning set for \mathbb{R}^3 contains at least 3 vectors.
Mark 1.00 out	Select one:
of 1.00	 a. False
	● b. True ✓
	The correct answer is: True
Question 19 Correct Mark 1.00 out	Let V be a vector space of dimension 4 and $W=\{v_1,v_2,v_3,v_4,v_5\}$ a set of nonzero vectors of V , then
of 1.00	Select one:
	\circ a. W is linearly independent
	 b. W is a spanning set
	 c. W is a basis
	In W is linearly dependent

The correct answer is: W is linearly dependent

 \checkmark

Question **20** Incorrect Let $E = [2 + x, 1 - x, x^2 + 1]$ be an ordered basis for P_3 . If $p(x) = 2x^2 + 6x + 5$, then the coordinate vector of p(x) with respect to E is

Mark 0.00 out of 1.00

Select one: a. $\begin{pmatrix} 3\\ -3\\ 2 \end{pmatrix}$ b. $\begin{pmatrix} 2\\ -3\\ 3 \end{pmatrix}$ c. $\begin{pmatrix} 3\\ 2\\ -3 \end{pmatrix}$ d. $\begin{pmatrix} 3\\ 5\\ 4 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 3 \\ -3 \\ 2 \end{pmatrix}$

Question 21 Incorrect Mark 0.00 out of 1.00 The coordinate vector of 8+6x with respect to the basis [2,2x] is $(4,3)^T$

Select one:

🔘 a. True

🔘 b. False 🗙

The correct answer is: True

Question 22

Incorrect Mark 0.00 out of 1.00 Let A be a 5 imes 4 matrix, and $\mathrm{rank}(A)=4$

Select one:

×

a. A has a row of zeros

 \odot b. The columns of A are linearly independent

 \odot c. The rows of A are linearly independent

 \bigcirc d. nullity(A) = 1

The correct answer is: The columns of A are linearly independent

Question 23 Correct Mark 1.00 out of 1.00 The vectors $\{(1, -1, 1)^T, (1, -3, 2)^T, (1, -2, 0)^T\}$ form a basis for \mathbb{R}^3 .

Select one:

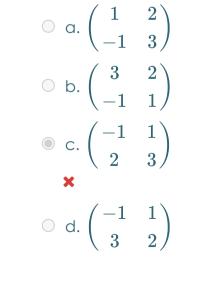
🔍 a. False

🔍 b. True 🗸

https://itc.birzeit.edu/mod/quiz/review.php?attempt=377557&cmid=176312#question-438532-26

The correct answer is: True

Question 24 Correct Mark 1.00 out	dimension of the subspace $S = ext{Span} \left\{ A_1 = \begin{pmatrix} 0 & 2 \\ 1 & 1 \end{pmatrix}, A_2 \begin{pmatrix} 3 & -1 \\ 1 & 0 \end{pmatrix}, A_3 = \begin{pmatrix} 6 & -8 \\ -1 & -3 \end{pmatrix} \right\}$ is
of 1.00	Select one:
	O a. 3
	O b.1
	● c.2
	O d. 0
	The correct answer is: 2
Question 25 Correct	If A is a $4 imes 6$ matrix, then nullity of $A\geq 2.$
Mark 1.00 out	Select one:
of 1.00	 a. False
	● b. True ✓
	The correct answer is: True
Question 26 Correct Mark 1.00 out	If v_1,v_2,\cdots,v_k are vectors in a vector space V , and Span $(v_1,v_2,\cdots,v_k)=$ Span $(v_1,v_2,\cdots,v_k)=$ span (v_1,v_2,\cdots,v_{k-1}) , then v_k can be written as alinear combination of v_1,v_2,\cdots,v_{k-1}
of 1.00	Selectoret
	Select one: a. False
	 ● d. False ● b. True ✓
	The correct answer is: True
Question 27 Incorrect	Let $E = [3-x,2+x]$, $F = [1,x]$ be ordered bases for $P_2.$ The transition matrix from E to F is
Mark 0.00 out	Select one:





https://itc.birzeit.edu/mod/quiz/review.php?attempt = 377557&cmid = 176312# question - 438532 - 26% and a statement of the statement of the

of 1.00

Question 28 Correct	If A is a nonzero $4 imes 2$ -matrix and $Ax=0$ has infinitely many solutions, then ${\sf rank}(A)=$
Mark 1.00 out of 1.00	Select one: a. 1 v
	O b.4
	O c. 3
	O d.2

The correct answer is: 1

Question 29 Correct Mark 1.00 out of 1.00

The transition matrix from the standard basis
$$S = \left[e_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}, e_2 = \begin{pmatrix} 0 \\ 1 \end{pmatrix}\right]$$
 to the ordered basis $U = \left[u_1 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}, u_2 = \begin{pmatrix} 3 \\ 7 \end{pmatrix}\right]$ is

Select one:

• a.
$$T = \begin{pmatrix} 1 & 3 \\ 2 & 7 \end{pmatrix}$$

• b. $T = \begin{pmatrix} 1 & -3 \\ -2 & 7 \end{pmatrix}$
• c. $T = \begin{pmatrix} 7 & -3 \\ -2 & 1 \end{pmatrix}$
• d. $T = \begin{pmatrix} -7 & 3 \\ 2 & -1 \end{pmatrix}$

The correct answer is: $T=egin{pmatrix} 7&-3\-2&1 \end{pmatrix}$

Question **30** Correct Mark 1.00 out of 1.00

Let
$$S=\left\{p(x)=ax^2+bx+c\in P_3:\int\limits_0^1p(x)\ dx=0
ight\}$$
 . The dimension of S is.

Select one:

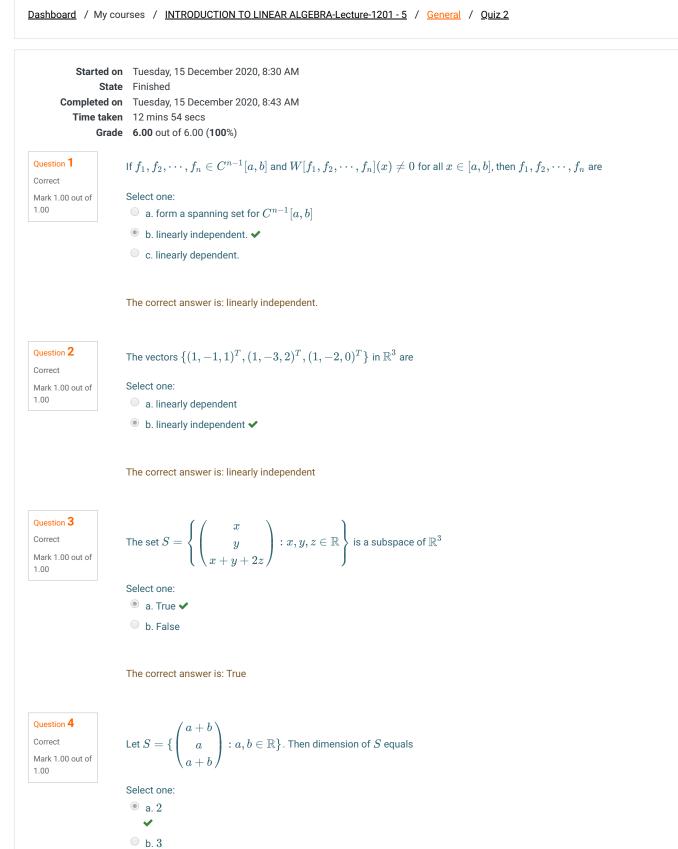
$$\odot$$
 b.3

○ c.1 • d. 2 \checkmark

The correct answer is: 2

Question 31 Correct	Let A be a $4 imes 3$ matrix, and nullity $(A)=0$, then			
Mark 1.00 out	Select one:			
of 1.00	${}^{\bigcirc}$ a. the columns of A form a basis for ${\mathbb R}^4$			
	\odot b. The rows of A are linearly independent			
	 c. The columns of A are linearly independent \checkmark 			
	\bigcirc d. rank $(A)=1$			
	The correct answer is: The columns of A are linearly independent			
Question 32 Correct	Let V be a vector space, $v_1,v_2,v_3\in V$ such that v_1,v_2 are linearly independent, v_2,v_3 are linearly independent, and v_1,v_3 are linearly independent, then v_1,v_2,v_3 are linearly independent.			
Mark 1.00 out of 1.00	Select one:			
	a. False			
	O b. True			
	The correct answer is: False			
	Jump to Announcements ►			

Data retention summary



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Question 5 Correct Mark 1.00 out of 1.00	Select one: ● a. True ✓			
	O b. False			
	The correct answer is: True			
Question 6 Correct	If $\{v_1, v_2, v_3, v_4\}$ forms a spanning set for a vector space V , v_4 can be written as a linear combination of v_1, v_2, v_3 , then			
Mark 1.00 out of 1.00	Select one:			
	${}^{\bigcirc}\;$ a. $\{v_1,v_2,v_3\}$ are linearly dependent in $V.$			
	${igle}$ b. $\{v_1,v_2,v_3\}$ are linearly independent in $V.$			
	• c. $\{v_1, v_2, v_3\}$ is a spanning set of V .			
	$\ \ $ d. $\{v_1,v_2,v_3\}$ is not a spanning set of $V.$			
	The correct answer is: $\{v_1, v_2, v_3\}$ is a spanning set of $V.$			
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Started or	n Wednesday, 23 December 2020, 10:01 AM
State	
Completed or	n Wednesday, 23 December 2020, 10:20 AM
Time taker	18 mins 19 secs
Marks	s 8.00/18.00
Grade	e 4.44 out of 10.00 (44%)
Question 1 Incorrect	dim(span $\{1-x,x^2,3+x^2,1+x^2\}$) equals
Mark 0.00 out	Select one:
of 2.00	a.0
	O b. 3
	• c.1
	d. 2
	×
	The correct answer is: 3
Question 2 Correct	One of the following is not a basis for P_3 :
Mark 2.00 out	Select one:
of 2.00	\bigcirc a. $\{1,2x,x^2-x\}$
	• b. $\{x, x^2+3, x^2-5\}$
	• c. $\{x-1, x^2+1, x^2-1\}$
	${ig \circ}$ d. $\{x^2+1,x^2-1,2\}$
	\checkmark
	The correct answer is: $\{x^2+1,x^2-1,2\}$
Question 3	If V is a vector space with $\dim(V)=n$, then
Correct	
Mark 2.00 out	Select one:

 \bigcirc a. Any set containing less than n vectors must be linearly independent.

 ${\ensuremath{\, \circ }}$ b. Any n linearly independent vectors in V span V.

V

of 2.00

 \odot c. Any spanning set for V must contain at most n vectors.

The correct answer is: Any n linearly independent vectors in V span V.

Question 4	The set of vectors $\{(1,a)^T,(b,1)^T\}$ is a spanning set for R^2 if				
Mark 0.00 out	Select one:				
of 2.00	${}^{\odot}$ a. $a eq b$				
	×				
	\bigcirc b. $ab eq 1$				
	\bigcirc c. $ab=1$				
	\bigcirc d. $a eq 1$ and $b eq 1$				
	The correct answer is: $ab eq 1$				
Question 5 Incorrect	Suppose that a vector space V contains n linearly independent vectors, then				
Mark 0.00 out	Select one:				
of 2.00	\bigcirc a. Any n vectors in V are linearly independent				
	\odot b. If a set S spans V then S must contain at most n vectors				
	$^{\circ}$ c. Any set containing more than n vectors is linearly dependent				
	×				
	${igle}$ d. If a set S spans V then S must contain at least n vectors				
	The correct answer is: If a set S spans V then S must contain at least n vectors				
Question 6 Correct	Let $f,g,h\in C^2[a,b]$, if $W[f,g,h](x)=0$ for all $x\in [a,b]$, then f,g,h are linearly dependent in $C[a,b]$				
Mark 2.00 out	Select one:				
of 2.00	🔘 a. True				
	b. False				
	The correct answer is: False				
Question 7 Complete	Let V is a vector space with dim $(V)=4$, if $v_1,v_2,v_3,v_4\in V$, then span $\{v_1,v_2,v_3,v_4\}=V.$				
Not graded	Select one:				

The correct answer is: False

Question 8

Incorrect

Mark 0.00 out of 2.00 The vectors $e^x, \, xe^x, \, x$ are linearly independent in C[0,1].

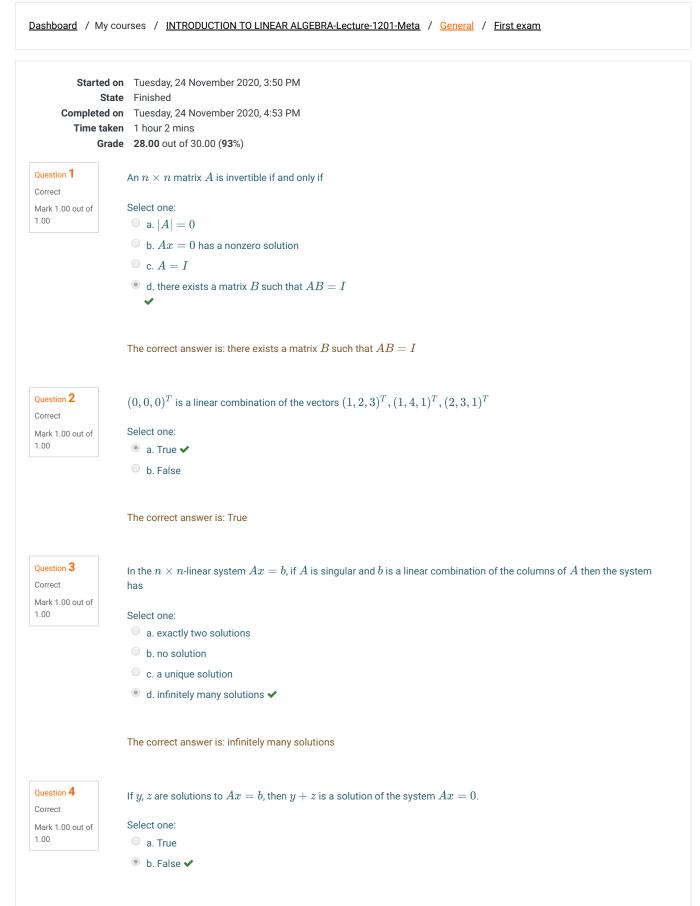
Select one:

🔘 a. True

🔘 b. False 🗙

The correct answer is: True

Question 9 Correct	If V is a vector space with $\dim(V)=n$, then any $n+1$ vectors in V are linearly dependent.			
Mark 2.00 out	Select one:			
of 2.00	a. True			
	O b. False			
	The correct answer is: True			
Question 10 Incorrect	If $\{v_1, v_2, \cdot \cdot \cdot, v_n\}$ are linearly independent in a vector space V , then V is finite-dimensional.			
Mark 0.00 out Select one:				
of 2.00	a. True ×			
	O b. False			
	The correct answer is: False			
Question 11 Complete	The correct answer is: False If x_1 and x_2 are linearly independent in R^3 , then $\exists x \in R^3$ such that $ ext{span}\{x_1, x_2, x\} = R^3.$			
Complete	If x_1 and x_2 are linearly independent in R^3 , then $\exists x \in R^3$ such that $ ext{span}\{x_1, x_2, x\} = R^3.$			
Complete	If x_1 and x_2 are linearly independent in R^3 , then $\exists x \in R^3$ such that $ ext{span}\{x_1, x_2, x\} = R^3.$ Select one:			
Complete	If x_1 and x_2 are linearly independent in R^3 , then $\exists x \in R^3$ such that $ ext{span}\{x_1, x_2, x\} = R^3$. Select one: $\label{eq:scalar}$ a. True			
Complete	If x_1 and x_2 are linearly independent in R^3 , then $\exists x \in R^3$ such that span $\{x_1, x_2, x\} = R^3$. Select one: a. True b. False			



The correct answer is: False

10. I aloc

Question 5	Any two $n imes n$ -singular matrices are row equivalent.			
Incorrect Mark 0.00 out of	Select one:			
1.00	a. False			
	• b. True ×			
	The correct answer is: False			
Question 6	If A is a $4 imes 3$ -matrix, $b\in \mathbb{R}^4$, and the system $Ax=b$ is consistent, then $Ax=b$ has a unique solution.			
Correct Mark 1.00 out of	Select one:			
1.00	a. True			
	● b. False ✓			
	The correct answer is: False			
Question 7				
Correct	$\begin{pmatrix} 1 & 2 & -1 & & 0 \\ 2 & 2 & 1 & & -1 \end{pmatrix}$ then the system has only and call tion if			
Mark 1.00 out of	If $(A b)=egin{pmatrix} 1&2&-1& &0\\ 2&3&1& &-1\\ 1&1&lpha& η \end{pmatrix}$, then the system has only one solution if			
1.00	$(1 1 \alpha \beta)$			
	Select one:			
	${}^{\circledast}$ a. $lpha eq 2$ and eta any number			
	$^{\odot}~$ b. $lpha eq 2$ and $eta eq -1$			
	$^{\odot}$ c. $lpha=2$ and $eta=-1$			
	$^{\odot}~$ d. $lpha=2$ and $eta eq-1$			
	The correct answer is: $lpha eq 2$ and eta any number			
Question 8 Correct	If A is a nonsingular $3 imes 3$ -matrix, then the reduced row echelon form of A has no row of zeros.			
Mark 1.00 out of	Select one:			
1.00	a. False			
	● b. True			
	The correct answer is: True			
Question 9 Correct	If ${\cal E}$ is an elementary matrix then one of the following statements is not true			
Mark 1.00 out of	Select one:			
1.00	$^{\odot}$ a. E^{-1} is an elementary matrix.			
	$^{\odot}$ b. E is nonsingular.			
	$^{\circ}$ c. E^{T} is an elementary matrix.			
	• d. $E + E^T$ is an elementary matrix.			

The correct answer is: $\boldsymbol{E} + \boldsymbol{E}^T$ is an elementary matrix.

Question 10	If A is a $3 imes 3$ matrix with $\det(A)=-2.$ Then $\det(adj(A))=$			
Correct	Select one:			
Mark 1.00 out of 1.00	 a. 4. 			
	 ✓ u ✓ 			
	◎ b. −4.			
	◎ c. −8.			
	○ d. 8.			
	The correct answer is: 4.			
Question 11 Correct	If A is singular and B is nonsingular $n imes n$ -matrices, then AB is			
Mark 1.00 out of	Select one:			
1.00	● a. singular			
	b. may or may not be singular			
	C. nonsingular			
	The correct answer is: singular			
Question 12 Correct Mark 1.00 out of 1.00	If $(A b)=egin{pmatrix} 1&1&2& &4\\ 2&-1&2& &6\\ 1&1&2& &5 \end{pmatrix}$, then the system $Ax=b$ is inconsistent			
	Select one:			
	In a. True			
	b. False			
	The correct answer is: True			
Question 13 Correct	If A is a singular $n imes n$ -matrix, $b\in \mathbb{R}^n$, then the system $Ax=b$			
Mark 1.00 out of	Select one:			
1.00	$^{\odot}$ a. has either no solution or an infinite number of solutions 🗸			
	b. has infinitely many solutions.			
	c. has a unique solution			
	d. is inconsistent			
	The correct answer is: has either no solution or an infinite number of solutions			
Question 14 Correct	If A is symmetric and skew symmetric then $A=0.$ (A is skew symmetric if $A=-A^T$).			
	If A is symmetric and skew symmetric then $A = 0$. (A is skew symmetric if $A = -A^T$). Select one: • a. True \checkmark			

Question 15 Correct	If $A=LU$ is the LU -factorization of a matrix A , and A is singular, then			
Mark 1.00 out of	Select one:			
1.00	$^{\odot}$ a. L and U are both singular			
	It is singular and L is nonsigular			
	\bigcirc c. L and U are both nonsingular			
	• d. L is singular and U is nonsigular			
	The correct answer is: U is singular and L is nonsigular			
Question 16 Correct	If A and B are singular matrices, then $A+B$ is also singular.			
Mark 1.00 out of	Select one:			
1.00	● a. False			
	b. True			
	The correct answer is: False			
Question 17 Correct	If A is a singular matrix, then A can be written as a product of elementary matrices.			
Mark 1.00 out of	Select one:			
1.00 ● a. False ✔				
	b. True			
	The correct answer is: False			
Question 18 Correct Mark 1.00 out of	Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (4,4,5)^T$. Then the third column of the matrix A is			
1.00	Select one:			
	• a. $(1, 1, 4)^T$.			
	• b. $(4, -1, 1)^T$.			
	\circ c. $(-1, -1, -4)^T$.			
	\bigcirc d. $(-1, -2, 1)^T$.			
	The correct answer is: $(1,1,4)^T$.			
Question 19 Correct	Let A be a $3 imes 4$ matrix which has a row of zeros, and let B be a $4 imes 4$ matrix , then AB has a row of zeros.			
Mark 1.00 out of	Select one:			
1.00	● a. True ✓			
	b. False			

The correct answer is: True

Correct Mark 1.00 out of 1.00

Let
$$A$$
 be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then

Select one:

- ${igledown}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k$
- $^{\odot}\,$ b. A is the zero matrix
- ${}^{igodoldsymbol{\circle}}$ c. The system Ax=0 has only one solution
- $^{\odot}\,$ d. A is singular.
 - ✓ .

The correct answer is: \boldsymbol{A} is singular.

Question 21

Correct Mark 1.00 out of 1.00

If ${\boldsymbol E}$ is an elementary matrix of type III, then ${\boldsymbol E}^T$ is

Select one:

- $\, \bigcirc \,$ a. an elementary matrix of type I
- $\,\bigcirc\,$ b. an elementary matrix of type II
- $^{\odot}\,$ c. not an elementary matrix
- $^{\odot}\,$ d. an elementary matrix of type III 🗸

The correct answer is: an elementary matrix of type III

Question 22

Correct Mark 1.00 out of 1.00

	(1	-1	1	
A =	3	-2	2	, then $\det(A) =$
	$\setminus -2$	-1	3 /	1

Select one:

Let

۲	a. 2
	✓
	b. 3
	c. 5
	d. 0

The correct answer is: $2 \ \ \,$

Correct Mark 1.00 out of 1.00

If the row echelon form of
$$(A|b)$$
 is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 0 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• c. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• d. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$

The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha \end{pmatrix}$

Question 24

Correct Mark 1.00 out of 1.00 If A, B are n imes n-skew-symmetric matrices(A is skew symmetric if $A^T = -A$), then AB + BA is symmetric

- Select one:
- a. True ✓● b. False

The correct answer is: True

Question 25

Correct Mark 1.00 out of 1.00 Let A be a 4×3 -matrix with $a_2 - a_3 = 0$. If $b = a_1 + a_2 + a_3$, where a_j is the jth column of A, then the system Ax = b will have infinitely many solutions.

- Select one:
- a. False
- 💿 b. True 🗸

The correct answer is: True

Correct Mark 1.00 out of 1.00

```
If A is a 3 × 3-matrix and the system Ax = \begin{pmatrix} 5\\1\\3 \end{pmatrix} has a unique solution, then the system Ax = \begin{pmatrix} 0\\0\\0 \end{pmatrix}
```

Select one:

- a. is inconsistent
- b. has only the zero solution.
- c. has infinitely many solutions

The correct answer is: has only the zero solution.

Question 27

Incorrect Mark 0.00 out of 1.00 If AB=0, where A and B are n imes n nonzero matrices. Then

Select one:

×

- \bigcirc b. both A, B are singular.
- \bigcirc c. both A, B are nonsingular.
- ${}^{\bigcirc}\,$ d. either A=0 or B=0

The correct answer is: both ${\cal A}, {\cal B}$ are singular.

Question 28

Correct Mark 1.00 out of 1.00 If x_0 is a solution of the nonhomogeneous system Ax = b and x_1 is a solution of the homogeneous system Ax = 0. Then $x_1 + x_0$ is a solution of

Select one:

Select one:

- \bigcirc a. the system Ax=0
- ${}^{igodold }$ b. the system Ax=2b
- $^{igodoldsymbol{ imes}}$ c. the system Ax=Ab
- ullet d. the system Ax=b

The correct answer is: the system Ax = b

Question 29

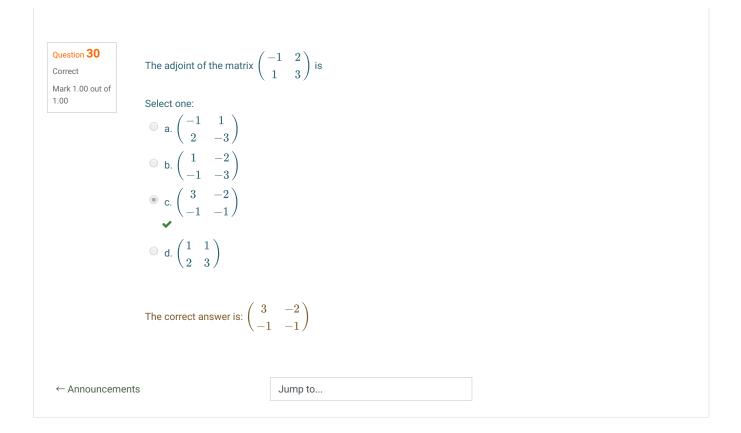
Correct Mark 1.00 out of 1.00

- $^{igodoldsymbol{\circ}}$ a. The system Ax=b is inconsistent
- ightarrow b. The system Ax=b has only two solutions
- ullet c. The system Ax=b has a unique solution

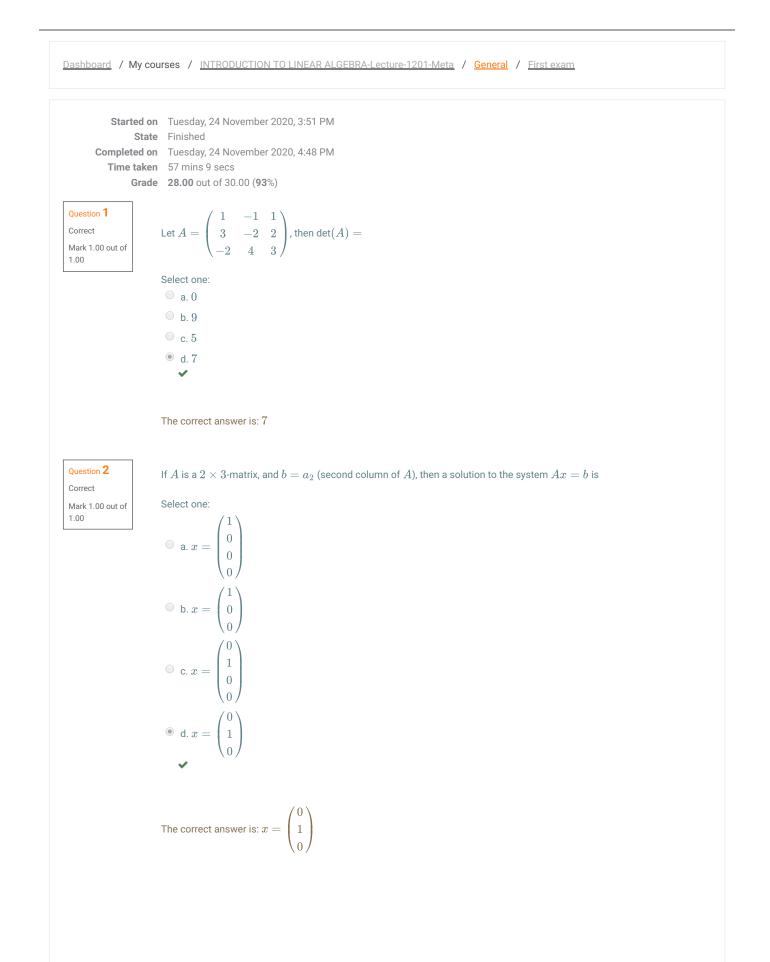
If A is a nonsingular n imes n matrix, $b \in \mathbb{R}^n$, then

ightarrow d. The system Ax=b has infinitely many solutions

The correct answer is: The system Ax = b has a unique solution



Data retention summary Switch to the standard theme



Correct Mark 1.00 out of 1.00

If A is a 2 imes 2 matrix with $\det(A) = -2$. Then $\det(adj(A)) =$

Sele	ct one:
	a. 2.
۲	b. −2.
	~
	c. −4.
	d. 4.

The correct answer is: -2.

Question 4

Correct Mark 1.00 out of 1.00

If A, B, C are n imes n nonsingular matrices, then $A^2 - B^2 = (A+B)(A-B).$

Select one:

a. False b. True

The correct answer is: False

Question 5 Correct Mark 1.00 out of 1.00

If \boldsymbol{A} is a singular matrix, then \boldsymbol{A} can be written as a product of elementary matrices.

Sele	ct	one:	
۲	a.	False	~

b. True

The correct answer is: False

Question 6

Correct Mark 1.00 out of 1.00

The adjoint of the matrix $\begin{pmatrix} 5 & 2 \\ -1 & 6 \end{pmatrix}$ is

Select one:

• a.
$$\begin{pmatrix} 5 & -1 \\ 2 & 6 \end{pmatrix}$$

• b. $\begin{pmatrix} 6 & -2 \\ 1 & 5 \end{pmatrix}$
• c. $\begin{pmatrix} -5 & -1 \\ 2 & -6 \end{pmatrix}$
• d. $\begin{pmatrix} -6 & 2 \\ -1 & -5 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 6 & -2 \\ 1 & 5 \end{pmatrix}$

Question 7 Correct Mark 1.00 out of 1.00	If A and B are $n \times n$ matrices such that $Ax \neq Bx$ for all nonzero $x \in \mathbb{R}^n$. Then Select one: a. A and B are singular. b. $A - B$ is singular. c. A and B are nonsingular. d. $A - B$ is nonsingular.
	The correct answer is: $A-B$ is nonsingular.
Question 8 Incorrect Mark 0.00 out of 1.00	If y , z are solutions to $Ax = b$, then $\frac{1}{3}y + \frac{3}{4}z$ is a solution of the system $Ax = b$. Select one: a. False b. True X
	The correct answer is: False
Question 9 Correct Mark 1.00 out of 1.00	Let A be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then
	Select one: a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A = E_1 E_2 \cdots E_k$ b. The system $Ax = 0$ has only one solution c. A is singular. d. A is the zero matrix
	The correct answer is: A is singular.
Question 10 Correct Mark 1.00 out of 1.00	If A is symmetric and skew symmetric then $A = 0$. (A is skew symmetric if $A = -A^T$). Select one: \bigcirc a. False \circledast b. True \checkmark
	The correct answer is: True

Question **11** Correct Mark 1.00 out of

1.00

An n imes n matrix A is invertible if and only if

ut of Select one:

 ${\ensuremath{\,^{}\!\!\circ}}$ a. there exists a matrix B such that AB=I

• b. A = I• c. |A| = 0

 ${igledown}$ d. Ax=0 has a nonzero solution

The correct answer is: there exists a matrix \boldsymbol{B} such that $\boldsymbol{A}\boldsymbol{B}=\boldsymbol{I}$

Question 12 Correct Mark 1.00 out of 1.00

If A,B,C are n imes n-matrices with A nonsigular and AB=AC , then B=C

Select one:

a. Falseb. True

The correct answer is: True

Question **13** Correct Mark 1.00 out of 1.00 In the square linear system Ax = b, if A is singular and b is not a linear combination of the columns of A then the system

Select one:

- $^{\odot}\,$ a. has a unique solution
- b. has infinitely many solutions
- c. can not tell
- d. has no solution

The correct answer is: has no solution

Question 14 Correct Mark 1.00 out of

1.00

Any two n imes n-singular matrices are row equivalent.

Select one: a. False

b. True

The correct answer is: False

Question **15** Correct Mark 1.00 out of 1.00

If A is a singular n imes n-matrix, $b \in \mathbb{R}^n$, then the system Ax = b

Select one:

- a. is inconsistent
- b. has a unique solution
- ${\ensuremath{\, \circ }}$ c. has either no solution or an infinite number of solutions ${\ensuremath{\, \cdot }}$
- d. has infinitely many solutions.

The correct answer is: has either no solution or an infinite number of solutions

Question **16** Correct Mark 1.00 out of 1.00

Let A be a 3×4 matrix which has a row of zeros, and let B be a 4×4 matrix , then AB has a row of zeros.

Select one: ● a. True ✔

🔍 b. False

The correct answer is: True

Question **17** Correct Mark 1.00 out of 1.00

If ${\boldsymbol E}$ is an elementary matrix of type III, then ${\boldsymbol E}^T$ is

Select one:

- $\,\bigcirc\,$ a. an elementary matrix of type II
- b. an elementary matrix of type I
- $^{\odot}\,$ c. an elementary matrix of type III 🗸
- d. not an elementary matrix

The correct answer is: an elementary matrix of type III

Question 18
Correct
Mark 1.00 out of

1.00

If the row echelon form of $(Aert b)$ is	(1)	0	-2	-1	-2	
	0	1	1	-1	-1	then the general form of the solutions is given by
	0/	0	1	1	0 /	

Select one:

• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• c. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$
• d. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$

The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha\end{pmatrix}$

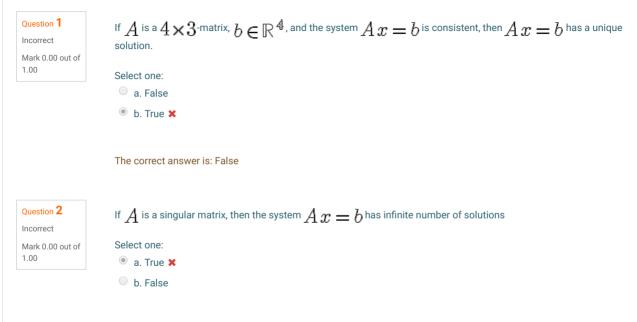
If $(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 0 & 3 & 2 & | & 1 \end{pmatrix}$ is the augmented matrix of the system Ax = b then the system has no solution Question 19 Incorrect Mark 0.00 out of 1.00 Select one: 🍥 a. False 🗙 b. True The correct answer is: True Question 20 If $(A|b)=egin{pmatrix} 1&2&-1&|&0\\ 2&3&1&|&-1\\ 1&1&lpha&|&eta \end{pmatrix}$, then the system is inconsistent if Correct Mark 1.00 out of 1.00 Select one: \bigcirc a. lpha
eq 2 and eta
eq -1 \bigcirc b. lpha
eq 2 and eta any number \odot c. lpha=2 and eta=-1 $^{\odot}\,$ d. lpha=2 and eta
eq-1The correct answer is: lpha=2 and eta
eq-1Question 21 Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3 imes 3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (5,2,4)^T$. Then the third column of the matrix A is Correct Mark 1.00 out of 1.00 Select one: • a. $(-2, 1, -3)^T$ • b. $(1, -1, -4)^T$. • c. $(2, -1, 3)^T$. • d. $(1, -1, 4)^T$. The correct answer is: $(2, -1, 3)^T$. Question 22 If A is a nonsingular n imes n matrix, then Correct Select one: Mark 1.00 out of 1.00 ${old o}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k.$ ~ • b. det(A) = 1 \bigcirc c. There is a singular matrix C such that A = CI. \bigcirc d. The system Ax = 0 has a nontrivial (nonzero) solution. The correct answer is: There are elementary matrices E_1, E_2, \dots, E_k such that $A = E_1 E_2 \dots E_k$.

Question 23 Correct	If A is a symmetric $n imes n$ -matrix and P any $n imes n$ -matrix, then PAP^T is
Mark 1.00 out of	Select one:
1.00	🍭 a. symmetric 🖌
	b. not defined
	C. singular
	d. not symmetric
	The correct answer is: symmetric
Question 24 Correct	If A is an $n imes n$ matrix and the system $Ax=b$ has infinitely many solutions, then
Mark 1.00 out of	Select one:
1.00	a. A is symmetric
	$^{\odot}$ b. A has a row of zeros
	 ● c. A singular ✓
	$^{\odot}$ d. A is nonsingular
	The correct answer is: A singular
Question 25 Correct	If A is a $3 imes 3$ matrix such that $det(A)=2$, then $det(3A)=6$
Mark 1.00 out of	Select one:
1.00	In a state I and a state I
	🔍 b. True
	The correct answer is: False
Question 26 Correct	If A,B,C are $3 imes 3$ -matrices, $\det(A)=9, \det(B)=2, \det(C)=3$, then $\det(3C^TBA^{-1})=$
Mark 1.00 out of	Select one:
1.00	• a. 6
	• b. 18
	• c. 16
	◎ d. 2
	The correct answer is: 18
Question 27 Correct	If A and B are singular matrices, then $A+B$ is also singular.
Mark 1.00 out of	Select one: ● a. False ✔
	• b. True

The correct answer is: False

Question 28 Correct	In the $n imes n$ -linear system $Ax = b$, if A is singular and b is a linear combination of the columns of A then the system has							
Mark 1.00 out of	1192							
1.00	Select one:							
	a. no solution							
	b. a unique solution							
	e. infinitely many solutions ✓							
	d. exactly two solutions							
	The correct answer is: infinitely many solutions							
Question 29 Correct	If A is a $4 imes 3$ -matrix, $b\in \mathbb{R}^4$, and the system $Ax=b$ is consistent, then $Ax=b$ has a unique solution.							
Mark 1.00 out of	Select one:							
1.00	In a. False							
	b. True							
	The correct answer is: False							
Question 30 Correct Mark 1.00 out of 1.00	If A is a 3×3 -matrix and the system $Ax = \begin{pmatrix} 5 \\ 1 \\ 3 \end{pmatrix}$ has a unique solution, then the system $Ax = \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$							
	Select one:							
	a. has infinitely many solutions							
	● b. has only the zero solution. ✓							
	C. is inconsistent							
	The correct answer is: has only the zero solution.							
← Announcement	ts Jump to							

<u>Da</u> Sv



The correct answer is: False

Question 4

Correct Mark 1.00 out of 1.00

If
$$(A|b) = \begin{pmatrix} 1 & 2 & -1 & | & 0 \\ 2 & 3 & 1 & | & -1 \\ 1 & 1 & \alpha & | & \beta \end{pmatrix}$$
, then the system has infinite number of solutions if

Select one:

• a. $\alpha \neq 2$ and β any number • b. $\alpha = 2$ and $\beta \neq -1$ • c. $\alpha = 2$ and $\beta = -1$ • d. $\alpha \neq 2$ and $\beta \neq -1$

The correct answer is: lpha=2 and eta=-1

Question 5 Correct Mark 1.00 out of 1.00 Let $A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&1&3 \end{pmatrix}$, then $\det(A)=$

a. 4
b. 0
c. 8
d. 1

Select one:

The correct answer is: 4

Question **6** Correct

Mark 1.00 out of 1.00

> Select one: a. False

b. True

The correct answer is: True

Question 7

Incorrect Mark 0.00 out of 1.00 If a matrix B is obtained from A by multiplying a row of A by a real number c, then |A| = c|B|.

If $(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 1 & 1 & 2 & | & 5 \end{pmatrix}$, then the system Ax = b is inconsistent

Select one: a. False

b. True ×

The correct answer is: False

Question 8	In the square linear system $Ax=b$, if A is singular and b is not a linear combination of the columns of A then the
ncorrect	system
Mark 0.00 out of 1.00	Select one:
	a. can not tell
	 b. has a unique solution
	c. has infinitely many solutions ×
	 d. has no solution
	The correct answer is: has no solution
Question 9 Correct	If E is an elementary matrix of type III, then E^T is
Mark 1.00 out of	Select one:
.00	a. not an elementary matrix
	● b. an elementary matrix of type III
	c. an elementary matrix of type I
	 d. an elementary matrix of type II
	The correct answer is: an elementary matrix of type III
Question 10 Correct	If $AB=0$, where A and B are $n imes n$ nonzero matrices. Then
Mark 1.00 out of	Select one:
1.00	${}^{\odot}$ a. both A,B are nonsingular.
	Is both A, B are singular. Image:
	$^{\odot}$ c. either A or B is singular
	$^{\odot}$ d. either $A=0$ or $B=0$
	The correct answer is: both A,B are singular.
Question 11	If A,B are $n imes n$ -skew-symmetric matrices(A is skew symmetric if $A^T=-A$), then $AB+BA$ is symmetric
Correct Mark 1.00 out of	Select one:
.00	• a. False
	● b. True
	The correct answer is: True
Question 12 Correct	If A is a $3 imes 3$ matrix such that $det(A)=2$, then $\det(3A)=6$
Mark 1.00 out of	Select one: a. True
	● b. False

The correct answer is: False

Correct Mark 1.00 out of 1.00 The adjoint of the matrix $\begin{pmatrix} 2 & 5 \\ 1 & 3 \end{pmatrix}$ is

Select one:

.

a.
$$\begin{pmatrix} -5 & 3\\ 2 & -1 \end{pmatrix}$$

b.
$$\begin{pmatrix} -3 & 5\\ 1 & -2 \end{pmatrix}$$

c.
$$\begin{pmatrix} 3 & -5\\ -1 & 2 \end{pmatrix}$$

c.
$$\begin{pmatrix} -2 & 1\\ 5 & -3 \end{pmatrix}$$

The correct answer is: $\begin{pmatrix} 3 & -5 \\ -1 & 2 \end{pmatrix}$

Question 14

Correct Mark 1.00 out of 1.00 Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (2,1,3)^T$. Then the third column of the matrix A is

Select one:
a.
$$(1, 1, 0)^T$$
.
b. $(-1, -2, 2)^T$.
c. $(4, -1, 1)^T$.
d. $(-1, -1, 2)^T$.

The correct answer is: $(-1, -2, 2)^T$.

Question **15** Correct Mark 1.00 out of 1.00 $(0,0,0)^T$ is a linear combination of the vectors $(1,2,3)^T, (1,4,1)^T, (2,3,1)^T$

Select one: ● a. True ✔

b. False

The correct answer is: True

Question 16

Correct Mark 1.00 out of 1.00 Let A be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then

Select one:

- ${}^{igodoldsymbol{\circ}}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k$
- $^{\odot}\,$ b. A is singular.
 - ✓ _
- $^{igodoldsymbol{\circ}}$ c. A is the zero matrix
- ${}^{igodoldsymbol{\circle}}$ d. The system Ax=0 has only one solution

et A be a $3 imes 4$ matrix which has a row of zeros, and let B be a $4 imes 4$ matrix , then AB has a row of zeros.
elect one:
🖻 a. False 🗙
b. True
ne correct answer is: True
A is a $4 imes 3$ matrix such that $Ax=0$ has only the zero solution, and $b=egin{pmatrix}1\\3\\2\\0\end{pmatrix}$, then the system $Ax=b$
elect one:
a. is either inconsistent or has an infinite number of solutions
b. is inconsistent
c. is either inconsistent or has one solution
d. has exactly one solution ×
ne correct answer is: is either inconsistent or has one solution
x_0 is a solution of the nonhomogeneous system $Ax=b$ and x_1 is a solution of the homogeneous system $Ax=0.$ nen x_1+x_0 is a solution of
elect one:
a. the system $Ax=0$
b. the system $Ax=2b$
c. the system $Ax = Ab$
d. the system $Ax = b$
ne correct answer is: the system $Ax=b$
A,B are two square nonzero matrices and $AB=0$ then both A and B are singular
elect one:
a. False
🖻 b. True 🗸
ne correct answer is: True

Question 21 Incorrect

Question 21 Incorrect	If A is a $3 imes 3$ matrix with $\det(A)=-1.$ Then $\det(adj(A))=$
Mark 0.00 out of	Select one:
1.00	● a1.
	×
	● b. 3.
	○ c. −3.
	d. 1.
	The correct answer is: 1.
Question 22 Correct	If A is a $3 imes 5$ matrix, then the system $Ax=0$
Mark 1.00 out of	Select one:
1.00	a. has no solution.
	b. has only the zero solution
	🍭 c. has infinitely many solutions ✔
	d. is inconsistent
	The correct answer is: has infinitely many solutions
Question 23 Correct	If A is a nonsingular $n imes n$ matrix, $b\in \mathbb{R}^n$, then
Mark 1.00 out of	Select one:
1.00	$^{\bigcirc}$ a. The system $Ax=b$ is inconsistent
	igodoldoldoldoldoldoldoldoldoldoldoldoldol
	$^{igodold m}$ c. The system $Ax=b$ has only two solutions
	 d. The system $Ax = b$ has a unique solution
	The correct answer is: The system $Ax=b$ has a unique solution

Question 24

Correct Mark 1.00 out of 1.00

If A, B are n imes n symmetric matrices then AB is symmetric.

Sele	ect	one
۲	a.	Fals

Sele	ect one:
۲	a. False 🗸
	b. True

The correct answer is: False

Correct Mark 1.00 out of 1.00

Select one: a. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}$ b. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$ c. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$ d. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$

The correct answer is: $x = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$

• a. A - B is nonsingular. • b. A and B are nonsingular.

C. A - B is singular. d. A and B are singular.

Select one:

×

Question 26 Incorrect Mark 0.00 out of 1.00

If A and B are n imes n matrices such that Ax
eq Bx for all nonzero $x\in \mathbb{R}^n.$ Then

Question 27

If A is a nonsingular n imes n matrix, then

The correct answer is: A-B is nonsingular.

Mark 1.00 out of 1.00

Select one: $\ \ \, \odot$ a. There are elementary matrices E_1,E_2,\cdots,E_k such that $A=E_1E_2\cdots E_k.$

- ✓
- $\hfill {\hfill 0}$ b. There is a singular matrix C such that A=CI.
- ${}^{\odot}\,$ c. The system Ax=0 has a nontrivial (nonzero) solution.

 \bigcirc d. det(A) = 1

The correct answer is: There are elementary matrices E_1, E_2, \cdots, E_k such that $A = E_1 E_2 \cdots E_k$.

Question 28	Any elementary matrix is nonsigular
Correct	
Mark 1.00 out of 1.00	Select one:
1.00	a. False
	● b. True ✓
	The correct answer is: True
Question 29 Correct	If A is singular and B is nonsingular $n imes n$ -matrices, then AB is
Mark 1.00 out of	Select one:
1.00	● a. singular
	b. may or may not be singular
	C. nonsingular
	The correct answer is: singular
Question 30 Correct	In the $n imes n$ -linear system $Ax=b$, if A is singular and b is a linear combination of the columns of A then the system has
Mark 1.00 out of 1.00	Select one:
Mark 1.00 out of 1.00	Select one:
	a. exactly two solutions
	 a. exactly two solutions b. no solution
	 a. exactly two solutions b. no solution c. a unique solution
	 a. exactly two solutions b. no solution
	 a. exactly two solutions b. no solution c. a unique solution
	 a. exactly two solutions b. no solution c. a unique solution d. infinitely many solutions

Data retention summary Switch to the standard theme

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201-Meta / General / First exam

Started on Tuesday, 24 November 2020, 4:00 PM State Finished Completed on Tuesday, 24 November 2020, 5:07 PM Time taken 1 hour 7 mins Grade 24.00 out of 30.00 (80%) Question 1 If A, B, C are 3×3 -matrices, $\det(A) = 9, \det(B) = 2, \det(C) = 3$, then $\det(3C^TBA^{-1}) =$ Correct Select one: Mark 1.00 out of 1.00 🔍 a. 6 b. 16 • c. 18 \checkmark \bigcirc d. 2 The correct answer is: 18 Question 2 Let $A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&-2&3 \end{pmatrix}$, then $\det(A)=$ Correct Mark 1.00 out of 1.00 Select one: ● a.1 \checkmark • b. 9 • c. 7 d. 0 The correct answer is: 1 The adjoint of the matrix $egin{pmatrix} 4 & 1 \\ 2 & -1 \end{pmatrix}$ is Question 3 Correct Mark 1.00 out of 1.00 Select one: • a. $\begin{pmatrix} -1 & -1 \\ -2 & 4 \end{pmatrix}$ \bigcirc b. $\begin{pmatrix} -1 & -2 \\ -3 & -5 \end{pmatrix}$ \odot c. $\begin{pmatrix} 4 & -1 \\ -2 & -1 \end{pmatrix}$ \bigcirc d. $\begin{pmatrix} -1 & 2 \\ 1 & -4 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} -1 & -1 \\ -2 & 4 \end{pmatrix}$

Correct Mark 1.00 out of 1.00

$$\mathsf{lf}A = \begin{pmatrix} 1 & 4 & -1 \\ 2 & 9 & 2 \\ -3 & -12 & 3 \end{pmatrix}$$

Select one:

• a.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ -3 & 0 & 1 \end{pmatrix}$$
•
• b. $L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ -3 & 0 & 0 \end{pmatrix}$
• c. $L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ 3 & 0 & 1 \end{pmatrix}$
• d. $L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ 3 & 0 & 0 \end{pmatrix}$

The correct answer is: $L=\begin{pmatrix} 1&0&0\\ 2&1&0\\ -3&0&1 \end{pmatrix}$

Question 5 Correct Mark 1.00 out of

1.00

Any two n imes n-singular matrices are row equivalent.

Select one: a. True

🍥 b. False 🗸

The correct answer is: False

Question **6** Correct Mark 1.00 out of

1.00

If \boldsymbol{A} is a nonsingular and symmetric matrix, then

Select one:

 ${}^{\bigcirc}\,$ a. A^{-1} is singular and symmetric

 $^{\odot}\,$ b. A^{-1} is singular and not symmetric

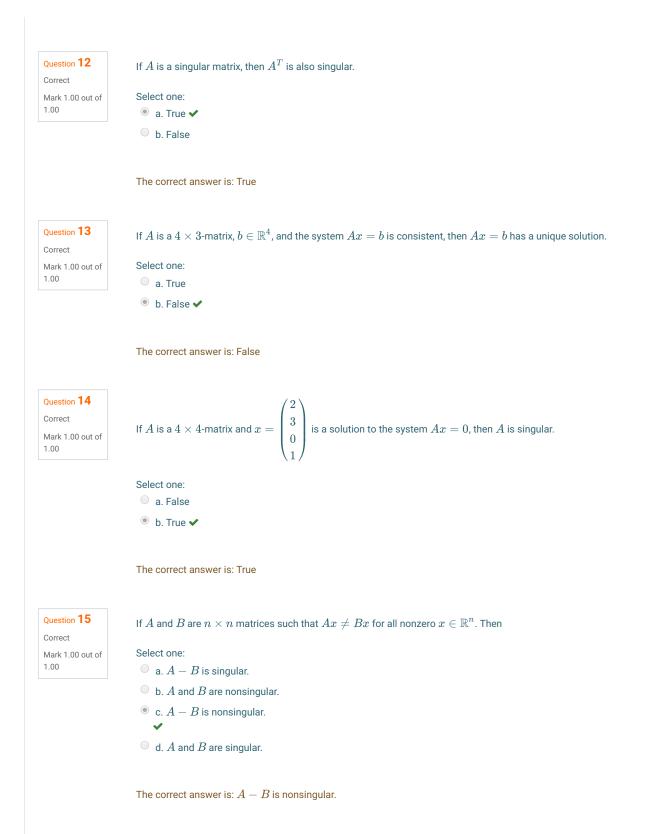
 ${\ensuremath{\,^{\circ}}}$ c. A^{-1} is nonsingular and symmetric

~

 $^{igodoldsymbol{\circ}}$ d. A^{-1} is nonsingular and not symmetric

The correct answer is: A^{-1} is nonsingular and symmetric

Question 7 Correct	If $AB=AC$, and $ A eq 0$, then
Mark 1.00 out of	Select one:
1.00	$^{igodoldsymbol{\circ}}$ a. $B eq C$
	$^{igodoldsymbol{ imes}}$ b. $A=0$
	$^{\odot}$ c. $A=C$
	• d. $B = C$.
	✓
	The correct answer is: $B = C$.
Question 8	If A,B are $n imes n$ symmetric matrices then AB is symmetric.
Incorrect Mark 0.00 out of	Select one:
1.00	 a. False
	🍥 b. True 🗙
	The correct answer is: False
Question 9 Correct	If y , z are solutions to $Ax=b$, then $y+z$ is a solution of the system $Ax=0.$
Mark 1.00 out of	Select one:
1.00	● a. False
	O b. True
	The correct answer is: False
Question 10 Correct Mark 1.00 out of 1.00	Let $A=egin{pmatrix} 1&1&0\ 1&a&1\ 1&1&2 \end{pmatrix}$. the value(s) of a that make A nonsingular
	Select one:
	$^{\bigcirc}$ a. $a eq rac{1}{2}$
	\bigcirc b. $a = 1$
	• c. $a = \frac{1}{2}$
	\checkmark
	The correct answer is: $a eq 1$
Question 11	If A,B are $n imes n$ -skew-symmetric matrices(A is skew symmetric if $A^T=-A$), then $AB+BA$ is symmetric
Incorrect	
Mark 0.00 out of	Select one:
1.00	a. True
	b. False ×



Question **16** Correct

Mark 1.00 out of 1.00

If
$$A = \begin{pmatrix} 1 & -2 & 5 \\ 4 & -11 & 8 \\ -3 & 3 & -27 \end{pmatrix}$$
 and $b = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$, then the system $Ax = b$ is consistent if and only if Select one:

a. $7b_1 - b_2 + b_3 \neq 1$
b. $7b_1 - b_2 + b_3 \neq 0$
c. $7b_1 - b_2 + b_3 = 1$
d. $7b_1 - b_2 + b_3 = 0$

The correct answer is: $7b_1-b_2+b_3=0$

Question **17** Correct Mark 1.00 out of 1.00

Any two n imes n-nonsingular matrices are row equivalent.

Select one:

a. False

~

🖲 b. True 🗸

The correct answer is: True

Question **18** Correct Mark 1.00 out of 1.00

A square matrix A is nonsingular iff its RREF (reduced row echelon form) is the identity matrix.

Select one: ◉ a. True ✔

b. False

Correct Mark 1.00 out of 1.00

If the row echelon form of
$$(A|b)$$
 is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 0 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

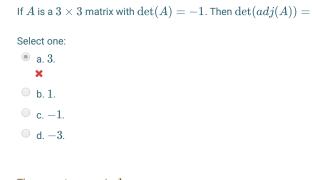
• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$
• c. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \\ \alpha \end{pmatrix}$
• d. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$

The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha \end{pmatrix}$

Question 20

Incorrect Mark 0.00 out of 1.00



The correct answer is: 1.

Question 21 Correct Mark 1.00 out of 1.00

If A is a 3 imes 3 matrix such that det(A)=2, then $\det(3A)=6$

Select one: a. True

● b. False ✓

The correct answer is: False

Question 22 If A is a 3 imes 5 matrix, then the system Ax=0Correct Select one: Mark 1.00 out of 1.00 a. is inconsistent b. has infinitely many solutions c. has no solution. d. has only the zero solution The correct answer is: has infinitely many solutions Question 23 Let U be an n imes n-matrix in reduced row echelon form and U
eq I , then Correct Select one: Mark 1.00 out of 1.00 • a. det(U) = 1 ${}^{igodold }$ b. The system Ux=0 has only the zero solution. \bigcirc c. U is the zero matrix ${\ensuremath{\, extstyle \, }}$ d. The system Ux=0 has infinitely many solutions ~

The correct answer is: The system Ux=0 has infinitely many solutions

Question 24

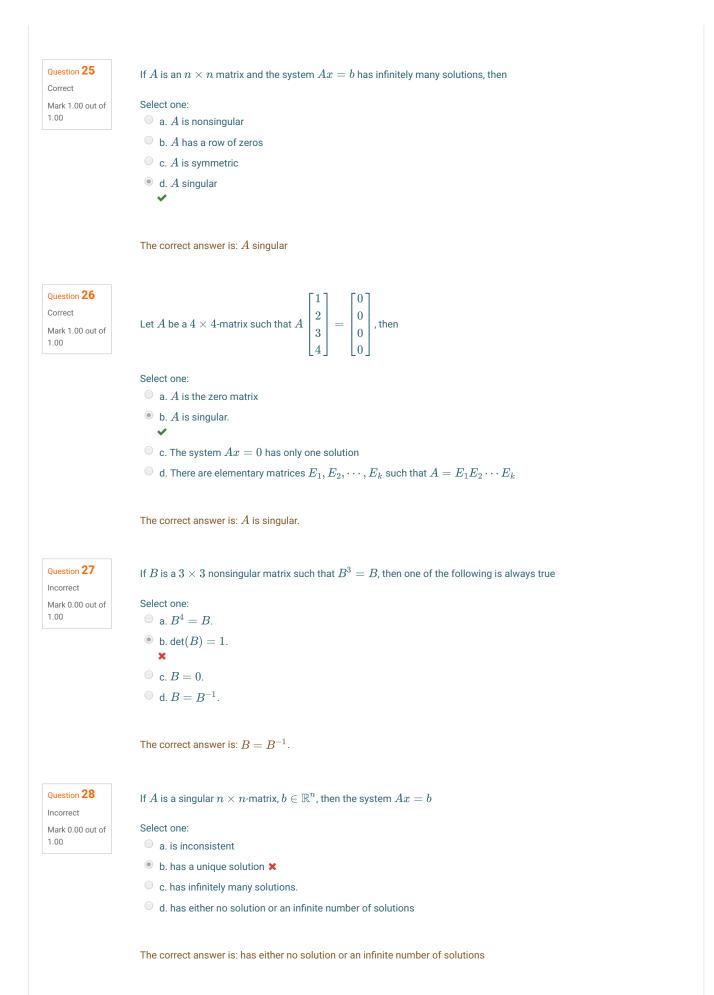
Mark 0.00 out of 1.00

Let A be a 3×3 -matrix with $a_1 = a_2$. If $b = a_2 - a_3$, where a_1, a_2, a_3 ar the columns of A, then a solution to the system Ax = b is

Select one:
a.
$$x = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$$

b. $x = \begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix}$
c. $x = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}$
d. $x = \begin{pmatrix} 0 \\ 0 \\ 2 \end{pmatrix}$

The correct answer is: $x = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$





Correct Mark 1.00 out of 1.00

Let
$$A = \begin{pmatrix} 1 & 2 & 3 & 0 \\ 1 & 1 & 2 & 1 \\ 2 & 3 & 5 & 1 \end{pmatrix}$$
 and $b = \begin{pmatrix} 2 \\ 1 \\ 4 \end{pmatrix}$. The system $Ax = b$

Select one:

- a. has exactly three solutions.
- b. has a unique solution
- $^{\odot}\,$ c. is inconsistent \checkmark
- d. has infinitely many solutions

The correct answer is: is inconsistent

Question **30** Correct Mark 1.00 out of 1.00

Let $(1, 2, 0)^T$ and $(2, 1, 1)^T$ be the first two columns of a 3×3 matrix A and $(1, 1, 1)^T$ be a solution of the system $Ax = (2, 1, -1)^T$. Then the third column of the matrix A is

Select one: a. $(1, 2, 2)^T$. b. $(-1, -2, -2)^T$. c. $(4, -1, 1)^T$.

• d.
$$(1, 1, 0)^T$$
.

The correct answer is: $(-1, -2, -2)^T$.

← Announcements

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Data retention summary Switch to the standard theme

	My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201 - 4 / General / Quiz 1
Starte	d on Monday, 19 October 2020, 10:01 AM
S	itate Finished
Complete	d on Monday, 19 October 2020, 10:31 AM
	iken 30 mins 1 sec
	arks 23.00/25.00
Gı	rade 9.20 out of 10.00 (92%)
Question 1 Correct	If a matrix A is row equivalent to I , then A is nonsingular.
Mark 2.00 out	Select one:
of 2.00	💿 a. True 🗸
	O b. False
Question 2 Correct	If a matrix A is nonsingular, then the matrix A^T is also nonsingular.
Mark 2.00 out	Select one:
of 2.00	💿 a. True 🗸
	O b. False
Question 3	
Correct	If A and B are $n imes n$ nonsingular matrices, then AB is also nonsingular.
Mark 2.00 out	Select one:
of 2.00	a. True
	O b. False
Question 4	If $A = b$ is an overdetermined and consistent linear system, then it must have infinitely many solutions
Correct	If $Ax=b$ is an overdetermined and consistent linear system, then it must have infinitely many solutions.
Mark 2.00 out	Select one:
of 2.00	O a. True
	b. False
Question 5	$\begin{bmatrix} 1 \end{bmatrix} \begin{bmatrix} 0 \end{bmatrix}$
Correct	Let A be a $3 imes 3$ matrix and suppose that $A egin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} = egin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$. Then
Mark 2.00 out of 2.00	

Mark 2.00 out of 2.00

Select one:

- \odot a. Ax=0< has infinitely many solutions \checkmark
- ${igle}$ b. $Ax=(1,0,0)^T$ has infinitely many solutions

 \bigcirc c. A is nonsingular

d. None of the above

Question **6**

Correct Mark 2.00 out of 2.00

If a matrix is in row echelon form, then it is also in reduced row echelon form.

A b Ealco

Select one:

🔘 a. True

Question 7Correct

Mark 3.00 out of 3.00

If $(A|b) = \begin{bmatrix} 1 & 0 & 2 & | & 1 \\ -1 & 1 & -1 & | & 0 \\ -1 & 0 & \alpha & | & \beta \end{bmatrix}$ is the augmented matrix of the system Ax = b. Answer the following questions.

The system has no solution if

 $\odot lpha = -2$ and eta
eq -1 🗸 $\odot lpha = -2$ and eta = -1 $\odot lpha
eq -2$ and eta
eq -1 $\odot lpha
eq -2$ and eta = -1The system has exactly one solution if $\odot lpha = -2$ and eta = -1 $@lpha
eq -2 \checkmark$ $\odot lpha = -2$ $\odot lpha
eq -2$ and eta
eq -1The system has infinitely many solutions if $\odot lpha
eq -2$ and eta
eq -1 $\odot lpha = -2$ and eta
eq -1 $\odot lpha = -2$ and eta = -1 🗸 $\odot lpha
eq -2$ and eta = -1

Question 8

Correct Mark 2.00 out of 2.00

Let $A=egin{bmatrix} 1&2&1\\ -1&1&0\\ 1&8&1 \end{bmatrix}$. If we want to find the LU factorization of A, then L=

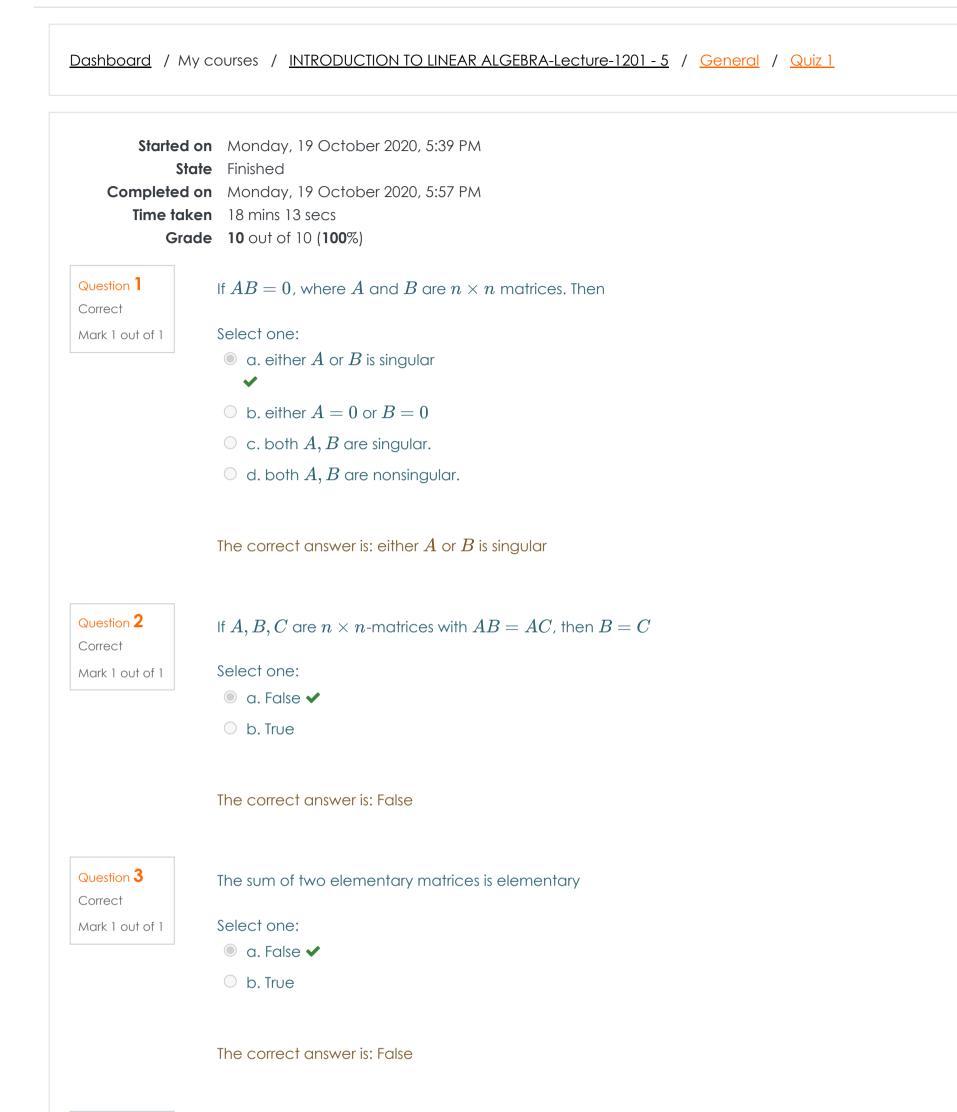
Select one:

elect one:				
		$\begin{bmatrix} 1\\ -1\\ 1 \end{bmatrix}$	0	0
	a.	-1	1	0 0
		1	2	1
	✓			
		[1	0	0
\bigcirc	b.		$\frac{1}{8}$	0
		1	8	1
		[1	0	0
\bigcirc	C.	$\begin{bmatrix} 1\\ 1 \end{bmatrix}$	1	0
		$\lfloor -1 \rfloor$	-2	1
		[1	0	0
\bigcirc	d.	1	1	0
		$\lfloor -1 \rfloor$	-8	1

Question 9	A homogeneous system can have a nontrivial solution.
Mark 0.00 out	Select one:
of 2.00	O a. True
	b. False ×
Question 10 Correct	The inverse of an elementary matrix is also an elementary matrix.
Correct Mark 2.00 out	The inverse of an elementary matrix is also an elementary matrix. Select one:
Correct	

Question 11 Correct	If a system of linear equations is undetermined, then it must have infinitely many solutions.	
Mark 2.00 out	Select one:	
of 2.00	 a. True 	
	b. False	
Question 12 Correct Mark 2.00 out	The sum of two $n imes n$ nonsingular matrices is also nonsingular. Select one:	
of 2.00	a. True	
	b. False	
محاضرات ►	Jump to Quiz 2 ►	

Data retention summary





Correct

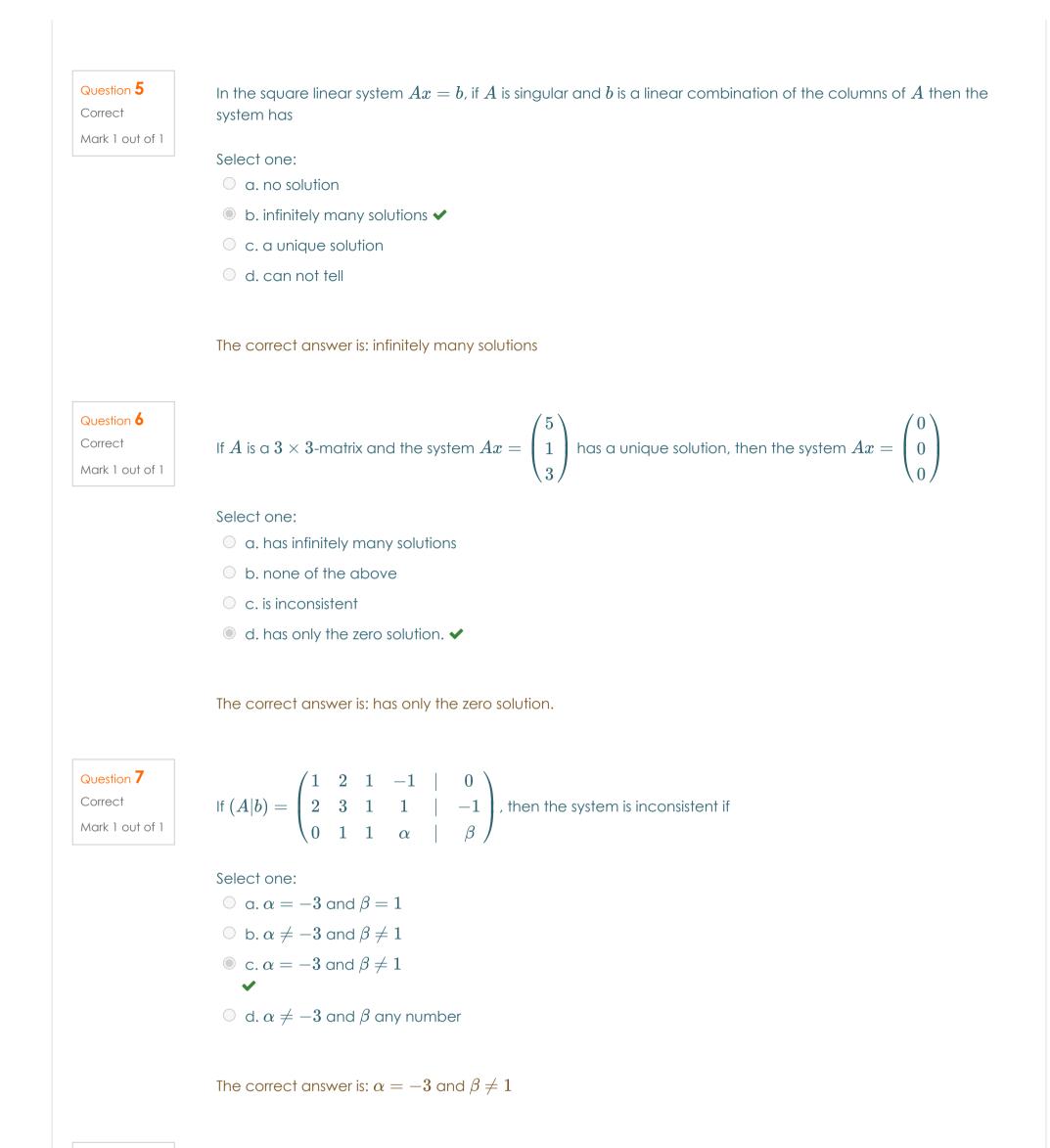
Mark 1 out of 1

If A,B are n imes n-symmetric matrices, then AB-BA is skew symmetric

Select one:

🔘 a. False

🔘 b. True 🗸



Correct

Mark 1 out of 1

If y, z are solutions to Ax = b, then y - z is a solution of the system Ax = 0.

Select one:

a. True

🔘 b. False

Question **9** Correct

If A is a 3 imes 4-matrix, and $b=a_2$ (second column of A), then a solution to the system Ax=b is

Mark 1 out of 1

Select one:
a.
$$x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$$

b. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$
c. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}$
d. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$

The correct answer is:
$$x=egin{pmatrix} 0\ 1\ 0\ 0\ \end{pmatrix}$$

Question 10 Correct Mark 1 out of 1 If B is a 3 imes 3 matrix such that $B^2=B.$ One of the following is always true

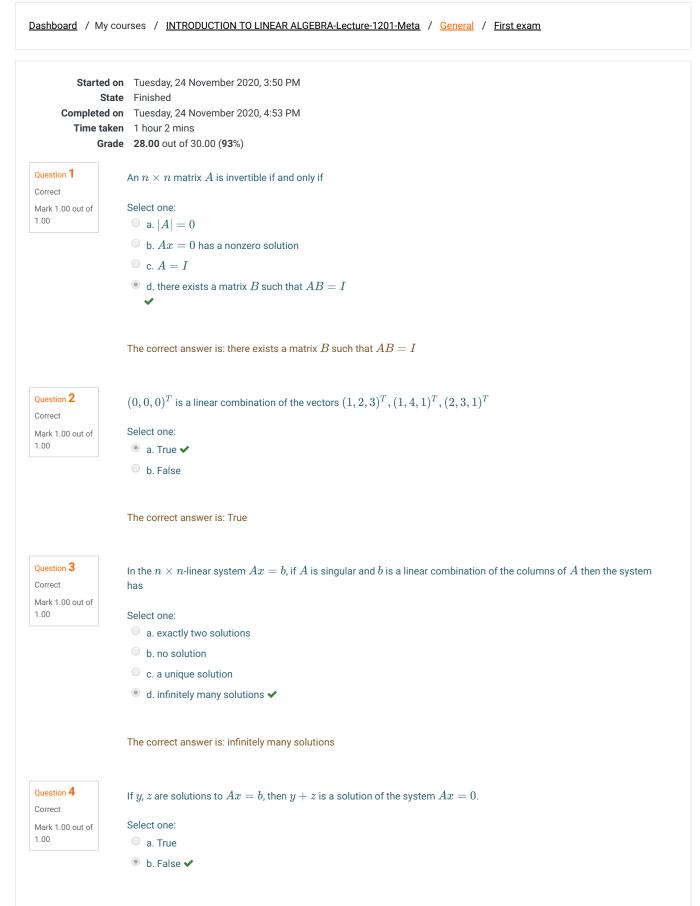
• a.
$$B^5 = B$$
.
• b. $B = 0$.
• c. $B = I$.

Select one:

• d. *B* is nonsingular.

The correct answer is: $B^5 = B$.

Data retention summary



The correct answer is: False

10. I aloc

Question 5	Any two $n imes n$ -singular matrices are row equivalent.
Incorrect Mark 0.00 out of	Select one:
1.00	a. False
	• b. True ×
	The correct answer is: False
Question 6	If A is a $4 imes 3$ -matrix, $b\in \mathbb{R}^4$, and the system $Ax=b$ is consistent, then $Ax=b$ has a unique solution.
Correct Mark 1.00 out of	Select one:
1.00	a. True
	● b. False ✓
	The correct answer is: False
Question 7	
Correct	$\begin{pmatrix} 1 & 2 & -1 & & 0 \\ 2 & 2 & 1 & & -1 \end{pmatrix}$ then the system has only and call tion if
Mark 1.00 out of	If $(A b)=egin{pmatrix} 1&2&-1& &0\\ 2&3&1& &-1\\ 1&1&lpha& η \end{pmatrix}$, then the system has only one solution if
1.00	$(1 1 \alpha \beta)$
	Select one:
	${}^{\circledast}$ a. $lpha eq 2$ and eta any number
	$^{\odot}~$ b. $lpha eq 2$ and $eta eq -1$
	$^{\odot}$ c. $lpha=2$ and $eta=-1$
	$^{\odot}~$ d. $lpha=2$ and $eta eq-1$
	The correct answer is: $lpha eq 2$ and eta any number
Question 8 Correct	If A is a nonsingular $3 imes 3$ -matrix, then the reduced row echelon form of A has no row of zeros.
Mark 1.00 out of	Select one:
1.00	a. False
	● b. True ✓
	The correct answer is: True
Question 9 Correct	If ${\cal E}$ is an elementary matrix then one of the following statements is not true
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. E^{-1} is an elementary matrix.
	$^{\odot}$ b. E is nonsingular.
	$^{\circ}$ c. E^{T} is an elementary matrix.
	• d. $E + E^T$ is an elementary matrix.

The correct answer is: $\boldsymbol{E} + \boldsymbol{E}^T$ is an elementary matrix.

Question 10	If A is a $3 imes 3$ matrix with $\det(A)=-2$. Then $\det(adj(A))=$
Correct	Select one:
Mark 1.00 out of 1.00	• a. 4.
	 ✓ u. i. ✓
	◎ b. −4.
	◎ c. −8.
	○ d. 8.
	The correct answer is: 4.
Question 11 Correct	If A is singular and B is nonsingular $n imes n$ -matrices, then AB is
Mark 1.00 out of	Select one:
1.00	● a. singular
	b. may or may not be singular
	C. nonsingular
	The correct answer is: singular
Question 12 Correct Mark 1.00 out of 1.00	If $(A b) = egin{pmatrix} 1 & 1 & 2 & & 4 \\ 2 & -1 & 2 & & 6 \\ 1 & 1 & 2 & & 5 \end{pmatrix}$, then the system $Ax = b$ is inconsistent
	Select one:
	In a. True
	b. False
	The correct answer is: True
Question 13 Correct	If A is a singular $n imes n$ -matrix, $b\in \mathbb{R}^n$, then the system $Ax=b$
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. has either no solution or an infinite number of solutions 🗸
	b. has infinitely many solutions.
	c. has a unique solution
	d. is inconsistent
	The correct answer is: has either no solution or an infinite number of solutions
	If A is symmetric and skew symmetric then $A=0.$ (A is skew symmetric if $A=-A^T$).
Question 14 Correct Mark 1.00 out of 1.00	Select one: ● a. True ✓

Question 15 Correct	If $A=LU$ is the LU -factorization of a matrix A , and A is singular, then
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. L and U are both singular
	It is singular and L is nonsigular
	\bigcirc c. L and U are both nonsingular
	• d. L is singular and U is nonsigular
	The correct answer is: U is singular and L is nonsigular
Question 16 Correct	If A and B are singular matrices, then $A+B$ is also singular.
Mark 1.00 out of	Select one:
1.00	In a. False ✓
	b. True
	The correct answer is: False
Question 17 Correct	If A is a singular matrix, then A can be written as a product of elementary matrices.
Mark 1.00 out of	Select one:
1.00	In a. False ✓
	b. True
	The correct answer is: False
Question 18 Correct Mark 1.00 out of	Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (4,4,5)^T$. Then the third column of the matrix A is
1.00	Select one:
	• a. $(1, 1, 4)^T$.
	• b. $(4, -1, 1)^T$.
	\circ b. (4, -1, -1) . \circ c. $(-1, -1, -4)^T$.
	\bigcirc d. $(-1, -2, 1)^T$.
	- u. (1, 2, 1) .
	The correct answer is: $(1,1,4)^T$.
Question 19 Correct	Let A be a $3 imes 4$ matrix which has a row of zeros, and let B be a $4 imes 4$ matrix , then AB has a row of zeros.
Mark 1.00 out of	Select one:
1.00	In a. True
	b. False

Correct Mark 1.00 out of 1.00

Let
$$A$$
 be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then

Select one:

- ${igledown}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k$
- igodot b. A is the zero matrix
- ${}^{igodoldsymbol{\circ}}$ c. The system Ax=0 has only one solution
- $^{\odot}\,$ d. A is singular.
 - ✓ .

The correct answer is: \boldsymbol{A} is singular.

Question 21

Correct Mark 1.00 out of 1.00

If ${\boldsymbol E}$ is an elementary matrix of type III, then ${\boldsymbol E}^T$ is

Select one:

- $\, \bigcirc \,$ a. an elementary matrix of type I
- $\,\bigcirc\,$ b. an elementary matrix of type II
- $^{\odot}\,$ c. not an elementary matrix
- $^{\odot}\,$ d. an elementary matrix of type III 🗸

The correct answer is: an elementary matrix of type III

Question 22

Correct Mark 1.00 out of 1.00

	(1	-1	1	
A =	3	-2	2	, then $\det(A) =$
	$\setminus -2$	-1	3 /	1

Select one:

Let

۲	a. 2
	✓
	b. 3
	c. 5
	d. 0

The correct answer is: $2 \ \ \,$

Correct Mark 1.00 out of 1.00

If the row echelon form of
$$(A|b)$$
 is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 0 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• c. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• d. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$

The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha \end{pmatrix}$

Question 24

Correct Mark 1.00 out of 1.00 If A, B are n imes n-skew-symmetric matrices(A is skew symmetric if $A^T = -A$), then AB + BA is symmetric

- Select one:
- a. True ✓● b. False

The correct answer is: True

Question 25

Correct Mark 1.00 out of 1.00 Let A be a 4×3 -matrix with $a_2 - a_3 = 0$. If $b = a_1 + a_2 + a_3$, where a_j is the jth column of A, then the system Ax = b will have infinitely many solutions.

- Select one:
- a. False
- 💿 b. True 🗸

Correct Mark 1.00 out of 1.00

```
If A is a 3 × 3-matrix and the system Ax = \begin{pmatrix} 5\\1\\3 \end{pmatrix} has a unique solution, then the system Ax = \begin{pmatrix} 0\\0\\0 \end{pmatrix}
```

Select one:

- a. is inconsistent
- b. has only the zero solution.
- c. has infinitely many solutions

The correct answer is: has only the zero solution.

Question 27

Incorrect Mark 0.00 out of 1.00 If AB=0, where A and B are n imes n nonzero matrices. Then

Select one:

×

- \bigcirc b. both A, B are singular.
- \bigcirc c. both A, B are nonsingular.
- ${}^{\bigcirc}\,$ d. either A=0 or B=0

The correct answer is: both ${\cal A}, {\cal B}$ are singular.

Question 28

Correct Mark 1.00 out of 1.00 If x_0 is a solution of the nonhomogeneous system Ax = b and x_1 is a solution of the homogeneous system Ax = 0. Then $x_1 + x_0$ is a solution of

Select one:

Select one:

- \bigcirc a. the system Ax=0
- ${}^{igodold }$ b. the system Ax=2b
- $^{igodoldsymbol{ imes}}$ c. the system Ax=Ab
- ullet d. the system Ax=b

The correct answer is: the system Ax = b

Question 29

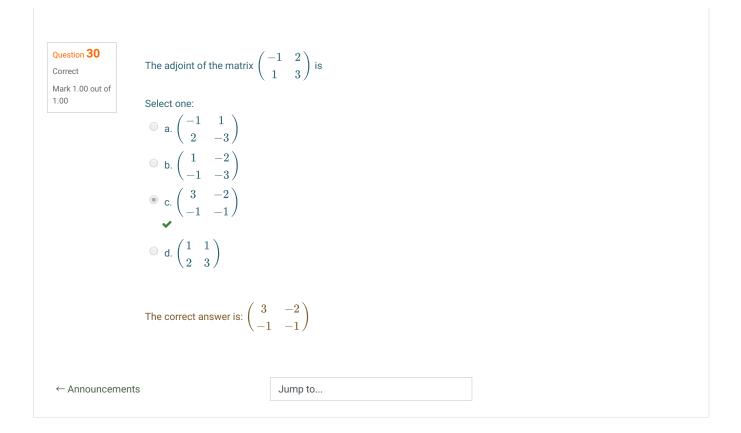
Correct Mark 1.00 out of 1.00

- $^{igodoldsymbol{\circ}}$ a. The system Ax=b is inconsistent
- ightarrow b. The system Ax=b has only two solutions
- ullet c. The system Ax=b has a unique solution

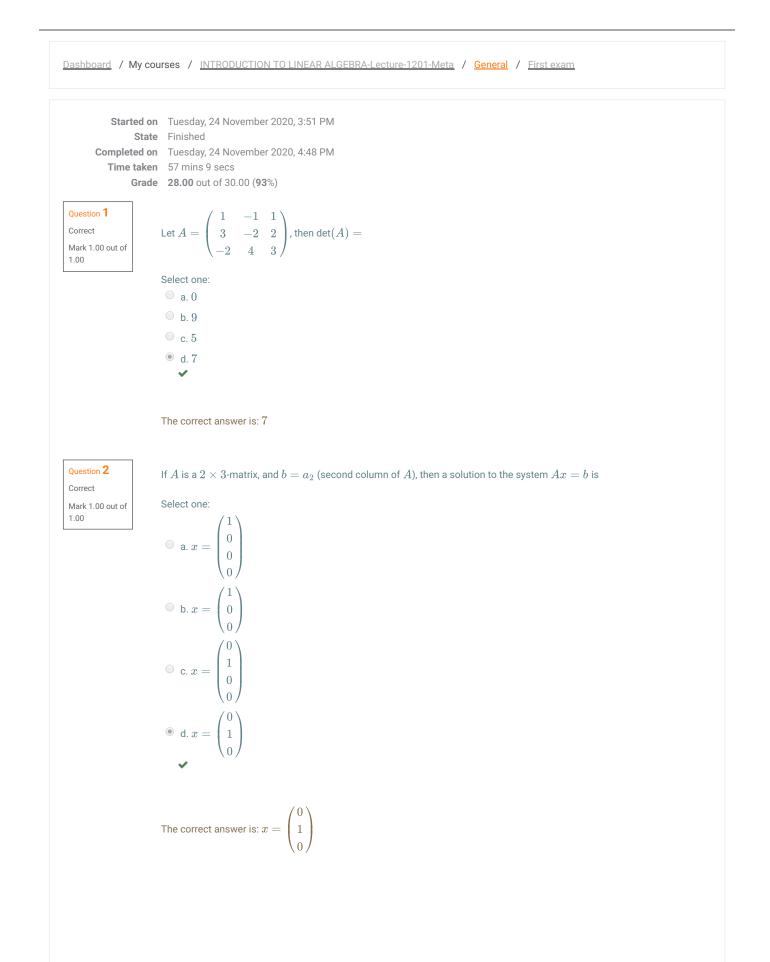
If A is a nonsingular n imes n matrix, $b \in \mathbb{R}^n$, then

ightarrow d. The system Ax=b has infinitely many solutions

The correct answer is: The system Ax = b has a unique solution



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Correct Mark 1.00 out of 1.00 If A is a 2 imes 2 matrix with $\det(A) = -2$. Then $\det(adj(A)) =$

Select one:				
	a. 2.			
۲	b. $-2.$			
•	 Image: A second s			
	c. −4.			
	d. 4.			

The correct answer is: -2.

Question 4

Correct Mark 1.00 out of 1.00 If A,B,C are n imes n nonsingular matrices, then $A^2-B^2=(A+B)(A-B).$

Select one: ● a. False ✔

b. True

The correct answer is: False

Question 5 Correct Mark 1.00 out of 1.00

If A is a singular matrix, then A can be written as a product of elementary matrices.

Select one: ● a. False ✓

🔍 b. True

The correct answer is: False

Question 6

Correct Mark 1.00 out of 1.00 The adjoint of the matrix $\begin{pmatrix} 5 & 2 \\ -1 & 6 \end{pmatrix}$ is

Select one:

• a.
$$\begin{pmatrix} 5 & -1 \\ 2 & 6 \end{pmatrix}$$

• b. $\begin{pmatrix} 6 & -2 \\ 1 & 5 \end{pmatrix}$
• c. $\begin{pmatrix} -5 & -1 \\ 2 & -6 \end{pmatrix}$
• d. $\begin{pmatrix} -6 & 2 \\ -1 & -5 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 6 & -2 \\ 1 & 5 \end{pmatrix}$

Question 7	If A and B are $n imes n$ matrices such that $Ax eq Bx$ for all nonzero $x\in \mathbb{R}^n.$ Then
Correct	
Mark 1.00 out of 1.00	Select one: \odot a. <i>A</i> and <i>B</i> are singular.
	• a. A and <i>D</i> are singular. • b. $A - B$ is singular.
	 c. A and B are nonsingular.
	• d. $A - B$ is nonsingular.
	·
	The correct answer is: $A-B$ is nonsingular.
Question 8	If y , z are solutions to $Ax = b$, then $\frac{1}{3}y + \frac{3}{4}z$ is a solution of the system $Ax = b$.
Mark 0.00 out of	Select one:
1.00	a. False
	🍥 b. True 🗙
	The correct answer is: False
Question 9	
Correct Mark 1.00 out of	Let A be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then
1.00	
	Select one:
	$^{\odot}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k$
	$^{\odot}$ b. The system $Ax=0$ has only one solution
	• c. A is singular.
	$^{\odot}$ d. A is the zero matrix
	The correct answer is: A is singular.
Question 10	If A is symmetric and skew symmetric then $A=0.$ (A is skew symmetric if $A=-A^T$).
Correct	A = A = A .
Mark 1.00 out of	Select one:
1.00	a. False
	● b. True
	The correct answer is: True

Question **11** Correct Mark 1.00 out of

1.00

An n imes n matrix A is invertible if and only if

ut of Select one:

a. there exists a matrix B such that AB = I

• b. A = I• c. |A| = 0

 ${igledown}$ d. Ax=0 has a nonzero solution

The correct answer is: there exists a matrix \boldsymbol{B} such that $\boldsymbol{A}\boldsymbol{B}=\boldsymbol{I}$

Question 12 Correct Mark 1.00 out of 1.00

If A,B,C are n imes n-matrices with A nonsigular and AB=AC , then B=C

Select one:

a. Falseb. True

The correct answer is: True

Question **13** Correct Mark 1.00 out of 1.00 In the square linear system Ax = b, if A is singular and b is not a linear combination of the columns of A then the system

Select one:

- $^{\odot}\,$ a. has a unique solution
- b. has infinitely many solutions
- c. can not tell
- d. has no solution

The correct answer is: has no solution

Question **14** Correct Mark 1.00 out of

1.00

Any two n imes n-singular matrices are row equivalent.

Select one: a. False

b. True

The correct answer is: False

Question **15** Correct Mark 1.00 out of 1.00

If A is a singular n imes n-matrix, $b \in \mathbb{R}^n$, then the system Ax = b

Select one:

- a. is inconsistent
- b. has a unique solution
- ${\ensuremath{\, \circ }}$ c. has either no solution or an infinite number of solutions ${\ensuremath{\, \cdot }}$
- d. has infinitely many solutions.

The correct answer is: has either no solution or an infinite number of solutions

Question **16** Correct Mark 1.00 out of 1.00

Let A be a 3×4 matrix which has a row of zeros, and let B be a 4×4 matrix , then AB has a row of zeros.

Select one: ● a. True ✔

b. False

The correct answer is: True

Question **17** Correct Mark 1.00 out of 1.00

If ${\boldsymbol E}$ is an elementary matrix of type III, then ${\boldsymbol E}^T$ is

Select one:

- $\,\bigcirc\,$ a. an elementary matrix of type II
- b. an elementary matrix of type I
- $^{\odot}\,$ c. an elementary matrix of type III 🗸
- d. not an elementary matrix

The correct answer is: an elementary matrix of type III

Question 18				
Correct				
Mark 1.00 out of				

1.00

	(1)	0	-2	-1	-2	
If the row echelon form of $\left(A b ight)$ is	0	1	1	-1	-1	then the general form of the solutions is given by
	$\setminus 0$	0	1	1	0 /	

Select one:

• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$
• c. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$
• d. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$

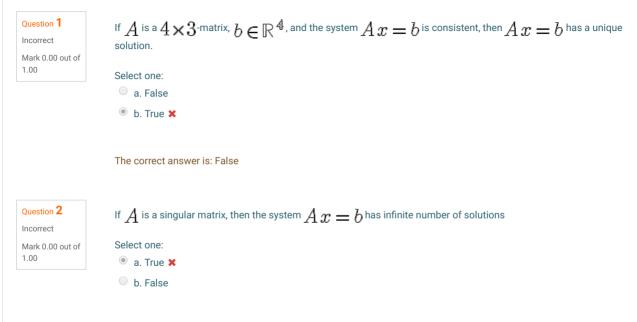
The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha\end{pmatrix}$

If $(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 0 & 3 & 2 & | & 1 \end{pmatrix}$ is the augmented matrix of the system Ax = b then the system has no solution Question 19 Incorrect Mark 0.00 out of 1.00 Select one: 🍥 a. False 🗙 b. True The correct answer is: True Question 20 If $(A|b)=egin{pmatrix} 1&2&-1&|&0\\ 2&3&1&|&-1\\ 1&1&lpha&|&eta \end{pmatrix}$, then the system is inconsistent if Correct Mark 1.00 out of 1.00 Select one: \bigcirc a. lpha
eq 2 and eta
eq -1 \bigcirc b. lpha
eq 2 and eta any number \odot c. lpha=2 and eta=-1 $^{\odot}\,$ d. lpha=2 and eta
eq-1The correct answer is: lpha=2 and eta
eq-1Question 21 Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3 imes 3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (5,2,4)^T$. Then the third column of the matrix A is Correct Mark 1.00 out of 1.00 Select one: • a. $(-2, 1, -3)^T$ • b. $(1, -1, -4)^T$. • c. $(2, -1, 3)^T$. • d. $(1, -1, 4)^T$. The correct answer is: $(2, -1, 3)^T$. Question 22 If A is a nonsingular n imes n matrix, then Correct Select one: Mark 1.00 out of 1.00 ${old o}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k.$ ~ • b. det(A) = 1 \bigcirc c. There is a singular matrix C such that A = CI. \bigcirc d. The system Ax = 0 has a nontrivial (nonzero) solution. The correct answer is: There are elementary matrices E_1, E_2, \dots, E_k such that $A = E_1 E_2 \dots E_k$.

Question 23 Correct	If A is a symmetric $n imes n$ -matrix and P any $n imes n$ -matrix, then PAP^T is
Mark 1.00 out of	Select one:
1.00	🍥 a. symmetric 🛩
	b. not defined
	c. singular
	 d. not symmetric
	The correct answer is: symmetric
Question 24 Correct	If A is an $n imes n$ matrix and the system $Ax=b$ has infinitely many solutions, then
Mark 1.00 out of	Select one:
1.00	$^{\odot}$ a. A is symmetric
	$^{\odot}$ b. A has a row of zeros
	 ● c. A singular ✓
	$^{\odot}$ d. A is nonsingular
	The correct answer is: A singular
Question 25 Correct	If A is a $3 imes 3$ matrix such that $det(A)=2$, then $\det(3A)=6$
Mark 1.00 out of	Select one:
1.00	● a. False
	b. True
	The correct answer is: False
Question 26 Correct	If A,B,C are $3 imes 3$ -matrices, $\det(A)=9, \det(B)=2, \det(C)=3$, then $\det(3C^TBA^{-1})=$
Mark 1.00 out of	Select one:
1.00	• a. 6
	• b. 18
	• c. 16
	O d. 2
	The correct answer is: 18
Question 27 Correct	If A and B are singular matrices, then $A+B$ is also singular.
Mark 1.00 out of	Select one: ● a. False ✔
	• b. True

Question 28 Correct	In the $n imes n$ -linear system $Ax = b$, if A is singular and b is a linear combination of the columns of A then the system has
Mark 1.00 out of	1192
1.00	Select one:
	a. no solution
	b. a unique solution
	e. infinitely many solutions ✓
	d. exactly two solutions
	The correct answer is: infinitely many solutions
Question 29 Correct	If A is a $4 imes 3$ -matrix, $b\in \mathbb{R}^4$, and the system $Ax=b$ is consistent, then $Ax=b$ has a unique solution.
Mark 1.00 out of	Select one:
1.00	In a. False
	b. True
	The correct answer is: False
Question 30 Correct Mark 1.00 out of 1.00	If A is a 3×3 -matrix and the system $Ax = \begin{pmatrix} 5 \\ 1 \\ 3 \end{pmatrix}$ has a unique solution, then the system $Ax = \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$
	Select one:
	a. has infinitely many solutions
	● b. has only the zero solution. ✓
	◎ c. is inconsistent
	The correct answer is: has only the zero solution.
← Announcement	ts Jump to

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Question 4

Correct Mark 1.00 out of 1.00

If
$$(A|b) = \begin{pmatrix} 1 & 2 & -1 & | & 0 \\ 2 & 3 & 1 & | & -1 \\ 1 & 1 & \alpha & | & \beta \end{pmatrix}$$
, then the system has infinite number of solutions if

Select one:

• a. $\alpha \neq 2$ and β any number • b. $\alpha = 2$ and $\beta \neq -1$ • c. $\alpha = 2$ and $\beta = -1$ • d. $\alpha \neq 2$ and $\beta \neq -1$

The correct answer is: lpha=2 and eta=-1

Question 5 Correct Mark 1.00 out of 1.00 Let $A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&1&3 \end{pmatrix}$, then $\det(A)=$

a. 4
b. 0
c. 8
d. 1

Select one:

The correct answer is: 4

Question **6** Correct

Mark 1.00 out of 1.00

> Select one: a. False

b. True

The correct answer is: True

Question 7

Incorrect Mark 0.00 out of 1.00 If a matrix B is obtained from A by multiplying a row of A by a real number c, then |A| = c|B|.

If $(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 1 & 1 & 2 & | & 5 \end{pmatrix}$, then the system Ax = b is inconsistent

Select one: a. False

b. True ×

Question 8	In the square linear system $Ax=b$, if A is singular and b is not a linear combination of the columns of A then the
ncorrect	system
Mark 0.00 out of 1.00	Select one:
	a. can not tell
	 b. has a unique solution
	c. has infinitely many solutions ×
	 d. has no solution
	The correct answer is: has no solution
Question 9 Correct	If E is an elementary matrix of type III, then E^T is
Mark 1.00 out of	Select one:
.00	a. not an elementary matrix
	● b. an elementary matrix of type III
	c. an elementary matrix of type I
	 d. an elementary matrix of type II
	The correct answer is: an elementary matrix of type III
Question 10 Correct	If $AB=0$, where A and B are $n imes n$ nonzero matrices. Then
Mark 1.00 out of	Select one:
1.00	${}^{\odot}$ a. both A,B are nonsingular.
	Is both A, B are singular. Image:
	$^{\odot}$ c. either A or B is singular
	$^{\odot}$ d. either $A=0$ or $B=0$
	The correct answer is: both A,B are singular.
Question 11	If A,B are $n imes n$ -skew-symmetric matrices(A is skew symmetric if $A^T=-A$), then $AB+BA$ is symmetric
Correct Mark 1.00 out of	Select one:
.00	• a. False
	● b. True
	The correct answer is: True
Question 12 Correct	If A is a $3 imes 3$ matrix such that $det(A)=2$, then $\det(3A)=6$
Mark 1.00 out of	Select one: a. True
	● b. False

Correct Mark 1.00 out of 1.00 The adjoint of the matrix $\begin{pmatrix} 2 & 5 \\ 1 & 3 \end{pmatrix}$ is

Select one:

.

a.
$$\begin{pmatrix} -5 & 3\\ 2 & -1 \end{pmatrix}$$

b.
$$\begin{pmatrix} -3 & 5\\ 1 & -2 \end{pmatrix}$$

c.
$$\begin{pmatrix} 3 & -5\\ -1 & 2 \end{pmatrix}$$

c.
$$\begin{pmatrix} -2 & 1\\ 5 & -3 \end{pmatrix}$$

The correct answer is: $\begin{pmatrix} 3 & -5 \\ -1 & 2 \end{pmatrix}$

Question 14

Correct Mark 1.00 out of 1.00 Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (2,1,3)^T$. Then the third column of the matrix A is

Select one:
a.
$$(1, 1, 0)^T$$
.
b. $(-1, -2, 2)^T$.
c. $(4, -1, 1)^T$.
d. $(-1, -1, 2)^T$.

The correct answer is: $(-1, -2, 2)^T$.

Question **15** Correct Mark 1.00 out of 1.00 $(0,0,0)^T$ is a linear combination of the vectors $(1,2,3)^T, (1,4,1)^T, (2,3,1)^T$

Select one: ● a. True ✔

b. False

The correct answer is: True

Question 16

Correct Mark 1.00 out of 1.00 Let A be a 4×4 -matrix such that $A \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, then

Select one:

- ${}^{igodoldsymbol{\circ}}$ a. There are elementary matrices E_1, E_2, \cdots, E_k such that $A=E_1E_2\cdots E_k$
- $^{\odot}\,$ b. A is singular.
 - ✓ _
- $^{igodoldsymbol{\circ}}$ c. A is the zero matrix
- ${igledown}$ d. The system Ax=0 has only one solution

et A be a $3 imes 4$ matrix which has a row of zeros, and let B be a $4 imes 4$ matrix , then AB has a row of zeros.
elect one:
🖻 a. False 🗙
b. True
ne correct answer is: True
A is a $4 imes 3$ matrix such that $Ax=0$ has only the zero solution, and $b=egin{pmatrix}1\\3\\2\\0\end{pmatrix}$, then the system $Ax=b$
elect one:
a. is either inconsistent or has an infinite number of solutions
b. is inconsistent
c. is either inconsistent or has one solution
d. has exactly one solution ×
ne correct answer is: is either inconsistent or has one solution
x_0 is a solution of the nonhomogeneous system $Ax=b$ and x_1 is a solution of the homogeneous system $Ax=0.$ nen x_1+x_0 is a solution of
elect one:
a. the system $Ax=0$
b. the system $Ax=2b$
c. the system $Ax = Ab$
d. the system $Ax = b$
ne correct answer is: the system $Ax=b$
A,B are two square nonzero matrices and $AB=0$ then both A and B are singular
elect one:
a. False
🖻 b. True 🗸
ne correct answer is: True

Question 21 Incorrect

Question 21 Incorrect	If A is a $3 imes 3$ matrix with $\det(A)=-1.$ Then $\det(adj(A))=$
Mark 0.00 out of	Select one:
1.00	● a1.
	×
	● b. 3.
	○ c. −3.
	d. 1.
	The correct answer is: 1.
Question 22 Correct	If A is a $3 imes 5$ matrix, then the system $Ax=0$
Mark 1.00 out of	Select one:
1.00	a. has no solution.
	b. has only the zero solution
	🍭 c. has infinitely many solutions ✔
	d. is inconsistent
	The correct answer is: has infinitely many solutions
Question 23 Correct	If A is a nonsingular $n imes n$ matrix, $b\in \mathbb{R}^n$, then
Mark 1.00 out of	Select one:
1.00	$^{\bigcirc}$ a. The system $Ax=b$ is inconsistent
	igodoldoldoldoldoldoldoldoldoldoldoldoldol
	$^{igodold m}$ c. The system $Ax=b$ has only two solutions
	 d. The system $Ax = b$ has a unique solution
	The correct answer is: The system $Ax=b$ has a unique solution

Question 24

Correct Mark 1.00 out of 1.00

If A, B are n imes n symmetric matrices then AB is symmetric.

Sele	ect	one
۲	a.	Fals

Sele	ect one:
۲	a. False 🗸
	b. True

Correct Mark 1.00 out of 1.00

Select one: a. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}$ b. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$ c. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$ d. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$

The correct answer is: $x = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$

• a. A - B is nonsingular. • b. A and B are nonsingular.

C. A - B is singular. d. A and B are singular.

Select one:

×

Question 26 Incorrect Mark 0.00 out of 1.00

If A and B are n imes n matrices such that Ax
eq Bx for all nonzero $x\in \mathbb{R}^n.$ Then

Question 27

If A is a nonsingular n imes n matrix, then

The correct answer is: A-B is nonsingular.

Mark 1.00 out of 1.00

Select one: $\ \ \, \odot$ a. There are elementary matrices E_1,E_2,\cdots,E_k such that $A=E_1E_2\cdots E_k.$

- ✓
- $\hfill {\hfill 0}$ b. There is a singular matrix C such that A=CI.
- ${}^{igodold }$ c. The system Ax=0 has a nontrivial (nonzero) solution.

 \bigcirc d. det(A) = 1

The correct answer is: There are elementary matrices E_1, E_2, \cdots, E_k such that $A = E_1 E_2 \cdots E_k$.

Question 28	Any elementary matrix is nonsigular
Correct	
Mark 1.00 out of 1.00	Select one:
1.00	a. False
	● b. True ✓
	The correct answer is: True
Question 29 Correct	If A is singular and B is nonsingular $n imes n$ -matrices, then AB is
Mark 1.00 out of	Select one:
1.00	● a. singular
	b. may or may not be singular
	C. nonsingular
	The correct answer is: singular
Question 30 Correct	In the $n imes n$ -linear system $Ax=b$, if A is singular and b is a linear combination of the columns of A then the system has
Mark 1.00 out of 1.00	Select one:
Mark 1.00 out of 1.00	Select one:
	a. exactly two solutions
	 a. exactly two solutions b. no solution
	 a. exactly two solutions b. no solution c. a unique solution
	 a. exactly two solutions b. no solution
	 a. exactly two solutions b. no solution c. a unique solution
	 a. exactly two solutions b. no solution c. a unique solution d. infinitely many solutions

Data retention summary Switch to the standard theme

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201-Meta / General / First exam

Started on Tuesday, 24 November 2020, 4:00 PM State Finished Completed on Tuesday, 24 November 2020, 5:07 PM Time taken 1 hour 7 mins Grade 24.00 out of 30.00 (80%) Question 1 If A, B, C are 3×3 -matrices, $\det(A) = 9, \det(B) = 2, \det(C) = 3$, then $\det(3C^TBA^{-1}) =$ Correct Select one: Mark 1.00 out of 1.00 🔍 a. 6 b. 16 • c. 18 \checkmark \bigcirc d. 2 The correct answer is: 18 Question 2 Let $A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&-2&3 \end{pmatrix}$, then $\det(A)=$ Correct Mark 1.00 out of 1.00 Select one: ● a.1 \checkmark • b. 9 • c. 7 d. 0 The correct answer is: 1 The adjoint of the matrix $egin{pmatrix} 4 & 1 \\ 2 & -1 \end{pmatrix}$ is Question 3 Correct Mark 1.00 out of 1.00 Select one: • a. $\begin{pmatrix} -1 & -1 \\ -2 & 4 \end{pmatrix}$ \bigcirc b. $\begin{pmatrix} -1 & -2 \\ -3 & -5 \end{pmatrix}$ \odot c. $\begin{pmatrix} 4 & -1 \\ -2 & -1 \end{pmatrix}$ \bigcirc d. $\begin{pmatrix} -1 & 2 \\ 1 & -4 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} -1 & -1 \\ -2 & 4 \end{pmatrix}$

Correct Mark 1.00 out of 1.00

$$\mathsf{lf}A = \begin{pmatrix} 1 & 4 & -1 \\ 2 & 9 & 2 \\ -3 & -12 & 3 \end{pmatrix}$$

Select one:

• a.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ -3 & 0 & 1 \end{pmatrix}$$
•
• b. $L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ -3 & 0 & 0 \end{pmatrix}$
• c. $L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ 3 & 0 & 1 \end{pmatrix}$
• d. $L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ 3 & 0 & 0 \end{pmatrix}$

The correct answer is: $L=\begin{pmatrix} 1&0&0\\ 2&1&0\\ -3&0&1 \end{pmatrix}$

Question 5 Correct Mark 1.00 out of

1.00

Any two n imes n-singular matrices are row equivalent.

Select one: a. True

🍥 b. False 🗸

The correct answer is: False

Question **6** Correct Mark 1.00 out of

1.00

If \boldsymbol{A} is a nonsingular and symmetric matrix, then

Select one:

 ${}^{\bigcirc}\,$ a. A^{-1} is singular and symmetric

 $^{\odot}\,$ b. A^{-1} is singular and not symmetric

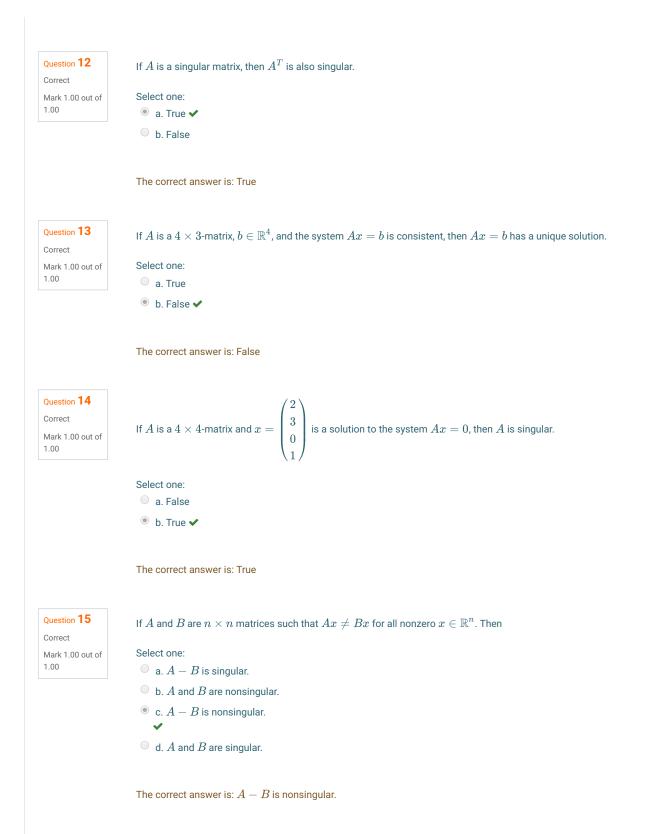
 ${\ensuremath{\,^{\circ}}}$ c. A^{-1} is nonsingular and symmetric

~

 $^{igodoldsymbol{\circ}}$ d. A^{-1} is nonsingular and not symmetric

The correct answer is: A^{-1} is nonsingular and symmetric

Question 7 Correct	If $AB=AC$, and $ A eq 0$, then
Mark 1.00 out of	Select one:
1.00	$^{igodoldsymbol{\circ}}$ a. $B eq C$
	$^{\odot}$ b. $A=0$
	$^{\bigcirc}$ c. $A=C$
	\odot d. $B = C$.
	✓
	The correct answer is: $B = C$.
Question 8	If A,B are $n imes n$ symmetric matrices then AB is symmetric.
Incorrect Mark 0.00 out of	Select one:
1.00	○ a. False
	b. True ×
	The correct answer is: False
Question 9	If y , z are solutions to $Ax=b$, then $y+z$ is a solution of the system $Ax=0$.
Correct	Select one:
Mark 1.00 out of 1.00	In the second secon
	 b. True
	The correct answer is: False
Question 10 Correct Mark 1.00 out of 1.00	Let $A=egin{pmatrix} 1&1&0\ 1&a&1\ 1&1&2 \end{pmatrix}$. the value(s) of a that make A nonsingular
	Select one:
	$^{\bigcirc}$ a. $a eq rac{1}{2}$
	\bigcirc b. $a = 1$
	$^{\circ}$ c. $a=rac{1}{2}$
	\checkmark
	The correct answer is: $a eq 1$
Question 11	If A,B are $n imes n$ -skew-symmetric matrices(A is skew symmetric if $A^T=-A$), then $AB+BA$ is symmetric
Mark 0.00 out of	Select one:
1.00	a. True
	🍥 b. False 🗙



Question **16** Correct

Mark 1.00 out of 1.00

If
$$A = \begin{pmatrix} 1 & -2 & 5 \\ 4 & -11 & 8 \\ -3 & 3 & -27 \end{pmatrix}$$
 and $b = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$, then the system $Ax = b$ is consistent if and only if Select one:

a. $7b_1 - b_2 + b_3 \neq 1$
b. $7b_1 - b_2 + b_3 \neq 0$
c. $7b_1 - b_2 + b_3 = 1$
d. $7b_1 - b_2 + b_3 = 0$

The correct answer is: $7b_1-b_2+b_3=0$

Question **17** Correct Mark 1.00 out of 1.00

Any two n imes n-nonsingular matrices are row equivalent.

Select one:

a. False

~

💿 b. True 🗸

The correct answer is: True

Question **18** Correct Mark 1.00 out of 1.00

A square matrix A is nonsingular iff its RREF (reduced row echelon form) is the identity matrix.

Select one: ◉ a. True ✔

b. False

The correct answer is: True

Correct Mark 1.00 out of 1.00

If the row echelon form of
$$(A|b)$$
 is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 0 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

• a.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$

• b. $x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$
• c. $x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \\ \alpha \end{pmatrix}$
• d. $x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$

The correct answer is: $x=egin{pmatrix} -2-lpha\\ -1+2lpha\\ -lpha\\ lpha \end{pmatrix}$

Question 20

Incorrect Mark 0.00 out of 1.00 If A is a 3×3 matrix with det(A) = -1. Then det(adj(A)) =Select one: • a. 3. • b. 1. • c. -1. • d. -3. The correct answer is: 1.

Question **21** Correct Mark 1.00 out of 1.00

If A is a 3 imes 3 matrix such that det(A)=2, then $\det(3A)=6$

Select one: a. True

● b. False ✓

Question 22 If A is a 3 imes 5 matrix, then the system Ax=0Correct Select one: Mark 1.00 out of 1.00 a. is inconsistent b. has infinitely many solutions c. has no solution. d. has only the zero solution The correct answer is: has infinitely many solutions Question 23 Let U be an n imes n-matrix in reduced row echelon form and U
eq I , then Correct Select one: Mark 1.00 out of 1.00 • a. det(U) = 1 ${}^{igodold }$ b. The system Ux=0 has only the zero solution. \bigcirc c. U is the zero matrix ${\ensuremath{\, extstyle \, }}$ d. The system Ux=0 has infinitely many solutions ~

The correct answer is: The system Ux=0 has infinitely many solutions

Question 24

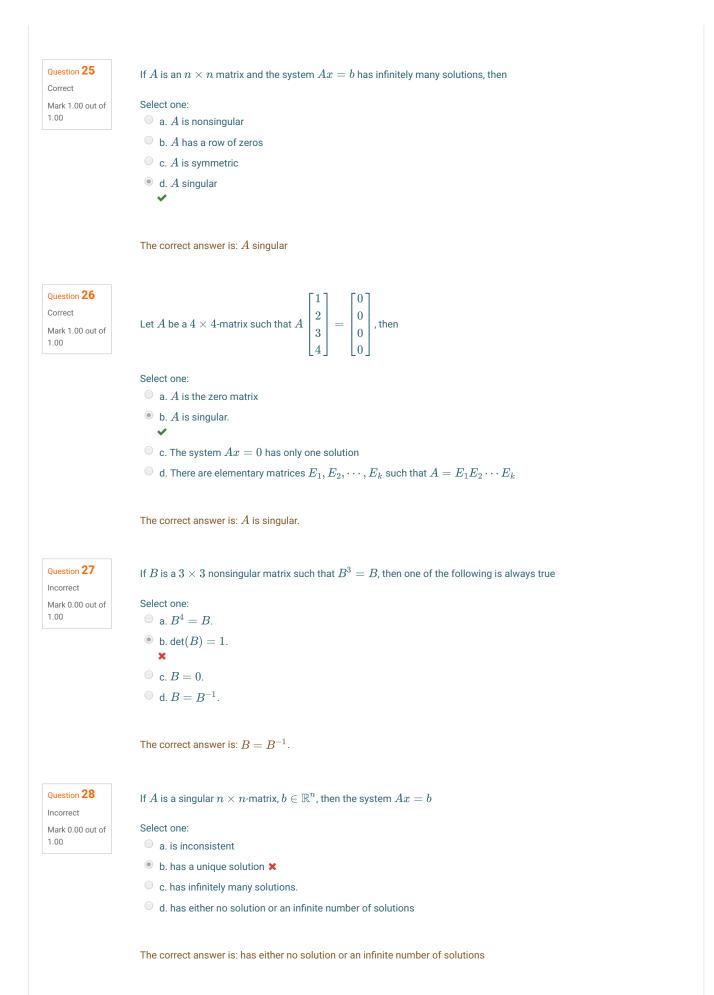
Mark 0.00 out of 1.00

Let A be a 3×3 -matrix with $a_1 = a_2$. If $b = a_2 - a_3$, where a_1, a_2, a_3 ar the columns of A, then a solution to the system Ax = b is

Select one:
a.
$$x = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$$

b. $x = \begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix}$
c. $x = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}$
d. $x = \begin{pmatrix} 0 \\ 0 \\ 2 \end{pmatrix}$

The correct answer is: $x = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$





Correct Mark 1.00 out of 1.00

Let
$$A=egin{pmatrix} 1&2&3&0\\ 1&1&2&1\\ 2&3&5&1 \end{pmatrix}$$
 and $b=egin{pmatrix} 2\\ 1\\ 4 \end{pmatrix}$. The system $Ax=b$

Select one:

- a. has exactly three solutions.
- b. has a unique solution
- $^{\odot}\,$ c. is inconsistent \checkmark
- d. has infinitely many solutions

The correct answer is: is inconsistent

Question **30** Correct Mark 1.00 out of

1.00

Let $(1, 2, 0)^T$ and $(2, 1, 1)^T$ be the first two columns of a 3×3 matrix A and $(1, 1, 1)^T$ be a solution of the system $Ax = (2, 1, -1)^T$. Then the third column of the matrix A is

Select one: a. $(1, 2, 2)^T$. b. $(-1, -2, -2)^T$. c. $(4, -1, 1)^T$. d. $(1, 1, 0)^T$.

The correct answer is: $(-1, -2, -2)^T$.

← Announcements

Jump to...

Data retention summary Switch to the standard theme

	My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201 - 4 / General / Quiz 1
Starte	d on Monday, 19 October 2020, 10:01 AM
S	itate Finished
Complete	d on Monday, 19 October 2020, 10:31 AM
	iken 30 mins 1 sec
	arks 23.00/25.00
Gı	rade 9.20 out of 10.00 (92%)
Question 1 Correct	If a matrix A is row equivalent to I , then A is nonsingular.
Mark 2.00 out	Select one:
of 2.00	💿 a. True 🗸
	O b. False
Question 2 Correct	If a matrix A is nonsingular, then the matrix A^T is also nonsingular.
Mark 2.00 out	Select one:
of 2.00	💿 a. True 🗸
	O b. False
Question 3	
Correct	If A and B are $n imes n$ nonsingular matrices, then AB is also nonsingular.
Mark 2.00 out	Select one:
of 2.00	a. True
	O b. False
Question 4	If $A = b$ is an overdetermined and consistent linear system, then it must have infinitely many solutions
Correct	If $Ax=b$ is an overdetermined and consistent linear system, then it must have infinitely many solutions.
Mark 2.00 out	Select one:
of 2.00	O a. True
	b. False
Question 5	$\begin{bmatrix} 1 \end{bmatrix} \begin{bmatrix} 0 \end{bmatrix}$
Correct	Let A be a $3 imes 3$ matrix and suppose that $A egin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} = egin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$. Then
Mark 2.00 out of 2.00	

Mark 2.00 out of 2.00

Select one:

- \odot a. Ax=0< has infinitely many solutions \checkmark
- ${igle}$ b. $Ax=(1,0,0)^T$ has infinitely many solutions

 \bigcirc c. A is nonsingular

d. None of the above

Question **6**

Correct Mark 2.00 out of 2.00

If a matrix is in row echelon form, then it is also in reduced row echelon form.

A b Ealco

Select one:

🔘 a. True

Question 7Correct

Mark 3.00 out of 3.00

If $(A|b) = \begin{bmatrix} 1 & 0 & 2 & | & 1 \\ -1 & 1 & -1 & | & 0 \\ -1 & 0 & \alpha & | & \beta \end{bmatrix}$ is the augmented matrix of the system Ax = b. Answer the following questions.

The system has no solution if

 $\odot lpha = -2$ and eta
eq -1 🗸 $\odot lpha = -2$ and eta = -1 $\odot lpha
eq -2$ and eta
eq -1 $\odot lpha
eq -2$ and eta = -1The system has exactly one solution if $\odot lpha = -2$ and eta = -1 $@lpha
eq -2 \checkmark$ $\odot lpha = -2$ $\odot lpha
eq -2$ and eta
eq -1The system has infinitely many solutions if $\odot lpha
eq -2$ and eta
eq -1 $\odot lpha = -2$ and eta
eq -1 $\odot lpha = -2$ and eta = -1 🗸 $\odot lpha
eq -2$ and eta = -1

Question 8

Correct Mark 2.00 out of 2.00

Let $A=egin{bmatrix} 1&2&1\\ -1&1&0\\ 1&8&1 \end{bmatrix}$. If we want to find the LU factorization of A, then L=

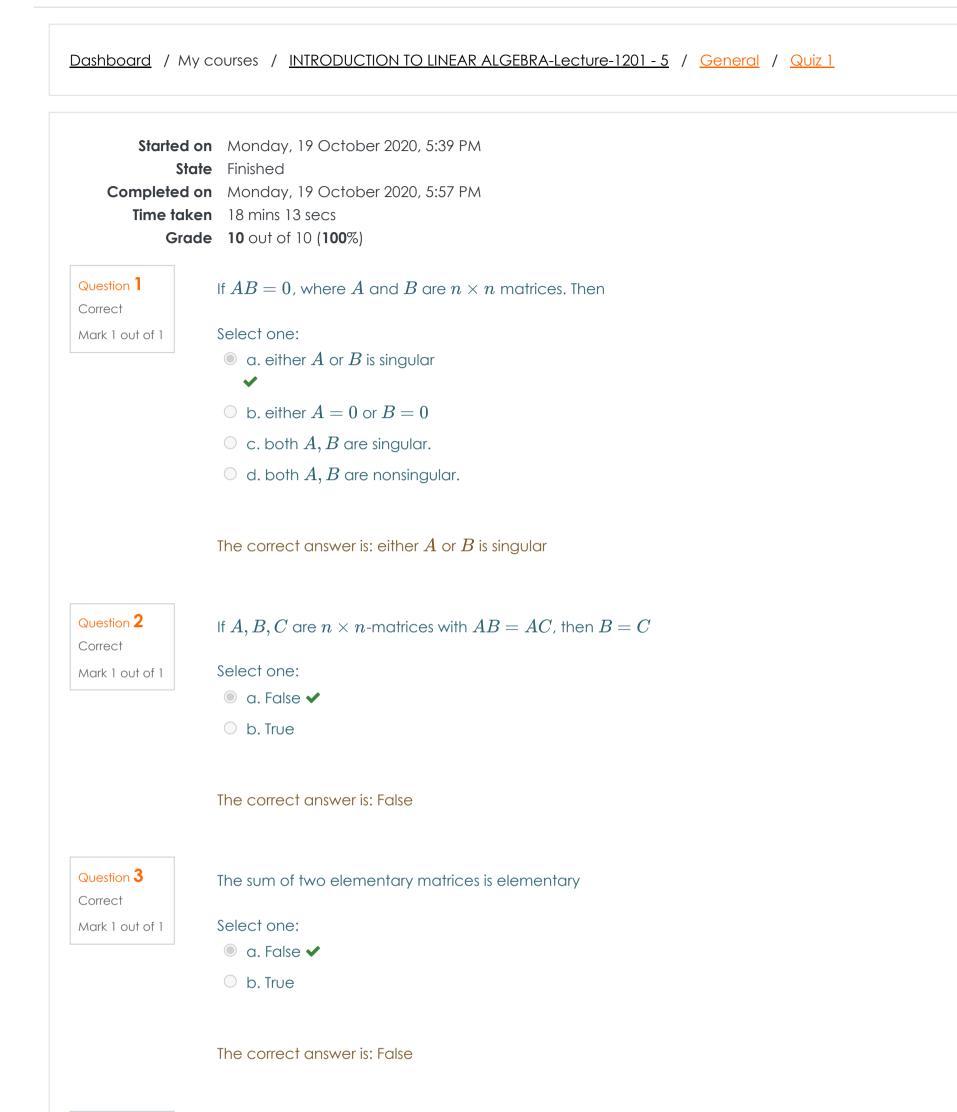
Select one:

sele	ect	one:		
		[1	0	0
	a.	$\begin{bmatrix} 1\\ -1\\ 1 \end{bmatrix}$	1	$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$
		1	2	1
	✓			
		[1]	0	0
\bigcirc	b.	-1	$\frac{1}{8}$	0
		[1	8	1
		$\begin{bmatrix} 1\\ 1 \end{bmatrix}$	0	0
\bigcirc	C.	1	1	0
		$\lfloor -1 \rfloor$	-2	1
		[1]	0	0
\bigcirc	d.	1	1	0
		$\lfloor -1 \rfloor$	-8	1

Question 9	A homogeneous system can have a nontrivial solution.
Mark 0.00 out	Select one:
of 2.00	O a. True
	b. False ×
Question 10 Correct	The inverse of an elementary matrix is also an elementary matrix.
Correct Mark 2.00 out	The inverse of an elementary matrix is also an elementary matrix. Select one:
Correct	

Question 11 Correct	If a system of linear equations is undetermined, then it must have infinitely many solutions.		
Mark 2.00 out	Select one:		
of 2.00	 a. True 		
	b. False		
Question 12 Correct Mark 2.00 out	The sum of two $n imes n$ nonsingular matrices is also nonsingular. Select one:		
of 2.00	O a. True		
	b. False		
محاضرات ►	Jump to Quiz 2 ►		

Data retention summary





Correct

Mark 1 out of 1

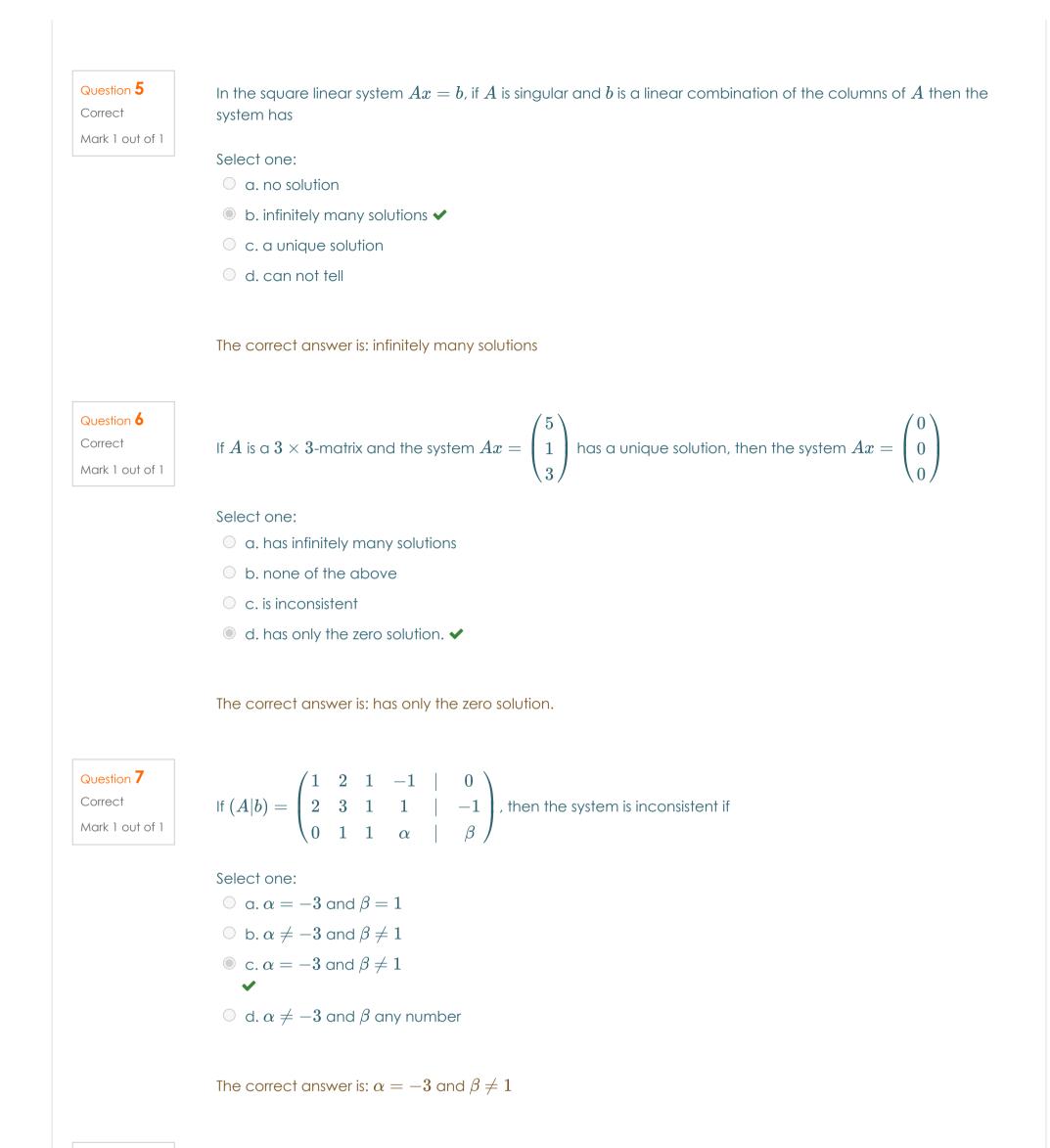
If A,B are n imes n-symmetric matrices, then AB-BA is skew symmetric

Select one:

🔍 a. False

🔘 b. True 🗸

The correct answer is: True



Correct

Mark 1 out of 1

If y, z are solutions to Ax = b, then y - z is a solution of the system Ax = 0.

Select one:

a. True

🔘 b. False

The correct answer is: True

Question **9** Correct

If A is a 3 imes 4-matrix, and $b=a_2$ (second column of A), then a solution to the system Ax=b is

Mark 1 out of 1

Select one:
a.
$$x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$$

b. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$
c. $x = \begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}$
d. $x = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \end{pmatrix}$

The correct answer is:
$$x=egin{pmatrix} 0\ 1\ 0\ 0\ \end{pmatrix}$$

Question 10 Correct Mark 1 out of 1 If B is a 3 imes 3 matrix such that $B^2=B.$ One of the following is always true

• a.
$$B^5 = B$$
.
• b. $B = 0$.
• c. $B = I$.

Select one:

• d. *B* is nonsingular.

The correct answer is: $B^5 = B$.

Data retention summary

25/06/2021

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 4 / General / Quiz 4 (6-6-2021).

Started on	Sunday, 6 June 2021, 4:00 PM
State	Finished
Completed on	Sunday, 6 June 2021, 4:13 PM
Time taken	12 mins 56 secs
Grade	5 out of 6 (83 %)

Question 1

Correct

Mark 1 out of 1

The rank of
$$A=egin{pmatrix} 1&4&1&2&1\ 2&6&-1&2&-1\ 3&10&0&4&0 \end{pmatrix}$$
 is

Select one:

a. 0
b. 3
c. 1
d. 2

The correct answer is: 2

Question 2	
Incorrect	
Mark 0 out of 1	

If A is a 3 imes 4 matrix, then

Select one:

- \bigcirc a. The columns of A are linearly independent
- \bigcirc b. The rows of A are linearly dependent
- \odot c. nullity $(A) \geq 1$
- \odot d. Rank(A) = 3

The correct answer is: $\operatorname{nullity}(A) \geq 1$

×

Correct Mark 1 out of 1

Let $E = [2 + x, 1 - x, x^2 + 1]$ be an ordered basis for P_3 . If $p(x) = 3x^2 + 5x + 4$, then the coordinate vector of p(x) with respect to E is

Select one:

```
a. pmatrix3
5
4[\end?]pmatrix
b. pmatrix3
-3
2[\end?]pmatrix
c. pmatrix3
2
-3[\end?]pmatrix
d. pmatrix2
-3
3[\end?]pmatrix
```

The correct answer is: $-3 \\ 3[\end?]pmatrix$

Question 4 Correct Mark 1 out of 1

If A is a 5×7 matrix, then nullity of $A \geq 2$.

Select one:

🔵 a. False

🖲 b. True

The correct answer is: True

Correct Mark 1 out of 1

If A is an n imes n-matrix and for each $b\in \mathbb{R}^{ extsf{n}}$ the system $A\,x=b$ has a unique solution, then

Select one:

- \odot a. A is singular
- \odot b. A is nonsingular

$$^{\circ}$$
 c. nullity(A) = 1 $^{\circ}$ d. rank(A) = $n\!-\!1$

The correct answer is: A is nonsingular

Question 6	
Correct	
Mark 1 out of 1	

let A be a 4 imes 7-matrix, if the row echelon form of A has 2 nonzero rows, then dim(column space of A) is

Select one:

a. 5
b. 2
c. 3

🔵 d. 6

The correct answer is: 2

Jump to...

Quiz 3 🕨

Data retention summary

Started on	Sunday, 11 April 2021, 8:33 AM
	Finished
	Sunday, 11 April 2021, 9:03 AM
Time taken	
Grade	8.00 out of 12.00 (67%)
Question 1	
ncorrect	
Mark 0.00 out of 1.00	
The correct answe	er is: False
o 11 11	
Question 2	
Question 4 Correct Mark 1.00 out of 1.00	

🔵 b. True

The correct answer is: False

Question 3	
Incorrect	
Mark 0.00 out of 1.00	

If AB=AC , and |A|
eq 0 , then

Select one:

o a. A = Cb. $B \neq C$ c. B = C.

×

The correct answer is: B = C.

25/06/2021

Question 4

Correct Mark 1.00 out of 1.00

If A is a singular matrix and U is the row echelon form of A , then $\det(U)=$.

Select one:

- a. none of the above
- b. 0
- c. 1
- \bigcirc d. ± 1

The correct answer is: 0

Question 5	
Correct	
Mark 1.00 out of 1.00	

If A is a symmetric n imes n-matrix and P any n imes n-matrix, then $P^T A P$ is

Select one:

- 🔘 a. not defined
- b. symmetric
- 🔵 c. singular
- Od. not symmetric

The correct answer is: symmetric

Question 6	
Correct	
Mark 1.00 out of 1.00	

If x_1 , x_2 are solutions to Ax=b, then $rac{1}{4}x_1+rac{3}{4}x_2$ is a solution of the system Ax=0.

Select one:

🔘 a. False

🔵 b. True

Correct Mark 1.00 out of 1.00

If A is a nonsingular and symmetric matrix, then

Select one:

 \bigcirc a. A^{-1} is singular and symmetric

 \odot b. A^{-1} is nonsingular and symmetric

 \odot c. A^{-1} is singular and not symmetric

 \bigcirc d. A^{-1} is nonsingular and not symmetric

The correct answer is: A^{-1} is nonsingular and symmetric

Question 8 Correct Mark 1.00 out of 1.00

A = pmatrix1 & -1 & 1Let $3\&-2\&2\\-2\&1\&3[\end?]pmatrix$, then $\det(A)=$ Select one:

⊙ a. 4

⊙ b. 8

○ c. ()

🔵 d. 1

The correct answer is: 4

Question **9** Incorrect

Mark 0.00 out of 1.00

$$\begin{array}{ll} A = p \, matrix 1 \& -2 \& 5 & b = p \, matrix b_1 \\ \mbox{If} \, 4 \& -5 \& 8 & \mbox{and} \, b_2 & \mbox{, then the system} \, A \, x = b \, \mbox{is} \\ -3 \& 3 \& -3 [\end?] p \, matrix & \mbox{b}_3 [\end?] p \, matrix \\ \mbox{consistent if and only if} \end{array}$$

• a. $b_3 + b_1 + b_2 = 0$ • b. $b_2 - b_1 - b_3 = 0$ • c. $b_1 - b_2 - b_3 = 0$ • d. $b_3 - b_1 - b_2 = 0$

The correct answer is: $b_1 - b_2 - b_3 = 0$

Question 10

Correct Mark 1.00 out of 1.00

Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (4,2,5)^T$. Then the third column of the matrix A is

Select one:

• a.
$$(1,-1,-4)^T$$

• b. $(1,-1,4)^T$
• c. $(1,1,4)^T$
• d. $(4,-1,1)^T$

The correct answer is: $(1, -1, 4)^T$.

×

Correct Mark 1.00 out of 1.00

If A is row equivalent to B, then
$$\det(A) = \det(B)$$
.

Select one:

🔵 a. True

🔘 b. False

The correct answer is: False

Question 12 Incorrect

Mark 0.00 out of 1.00

If A is a nonsingular n imes n -matrix, then

Select one:

- \odot a. The system Ax=0 has a nontrivial (nonzero) solutions.
- \odot b. There is an elementary matrix E such that A=E.
- $^{\circ}$ c. det(A) = 1
- $_{\odot}$ d. There is a nonsingular matrix B such that AB=I.

The correct answer is: There is a nonsingular matrix B such that AB = I.

◀ Quiz 3

Jump to...

Quiz 1 (chapter one) ►

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Data retention summary

Dashboard	/ My courses /	INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 4 /	<u>General</u> /	<u>Quiz 3</u>
------------------	----------------	---	------------------	---------------

Started on	Saturday, 29 May 2021, 5:00 PM
State	Finished
Completed on	Saturday, 29 May 2021, 5:15 PM
Time taken	15 mins 1 sec
Grade	4 out of 6 (67 %)

Incorrect

Mark 0 out of 1

Every linearly independent set of vectors in \mathbb{R}^4 has exactly 4 vectors.

Select one:

🔵 a. False

💿 b. True

The correct answer is: False

Question 2	
Correct	
Mark 1 out of 1	

If $\{v_1, v_2, v_3, v_4\}$ forms a spanning set for a vector space V, v_4 can be written as a linear combination of v_1, v_2, v_3 , then

Select one:

- \odot a. $\{v_1, v_2, v_3\}$ is a spanning set of V.
- \bigcirc b. $\{v_1, v_2, v_3\}$ is not a spanning set of V.
- \bigcirc c. $\{v_1, v_2, v_3\}$ are linearly dependent in V.
- \bigcirc d. $\{v_1, v_2, v_3\}$ are linearly independent in V.

The correct answer is: $\{v_1, v_2, v_3\}$ is a spanning set of V.

×

Question 3
Incorrect
Mark 0 out of 1

 $\dim ig(ext{span}(x^2,3+x^2,x^2+1)ig)$ is

Select one:

- 0 a. 1
- b. 3c. 0
- \bigcirc d. 2

The correct answer is: 2

Question 4	
Correct	
Mark 1 out of 1	

If
$$V$$
 is a vector space and $\{v_1, v_2, \cdots, v_n\}$ is a spanning set for V and $v_{n+1} \in V$, then the set $\{v_1, v_2, \cdots, v_{n+1}\}$ is

Select one:

- 🔘 a. not a spanning set.
- b. a spanning set.

The correct answer is: a spanning set.

Question 5	
Correct	
Mark 1 out of 1	

Let V be a vector space of dimension 4 and $W = \{v_1, v_2, v_3, v_4, v_5\}$ a set of nonzero vectors of V , then

Select one:

- \odot a. W is a spanning set
- 🗆 b. 🎶 is a basis
- \odot c. W is linearly dependent
- \bigcirc d. /// is linearly independent

The correct answer is: W is linearly dependent

×

Correct Mark 1 out of 1

The vectors
$$\left\{(1,\!-1,\!1)^T,\!(1,\!-3,\!2)^T,\!(1,\!-2,\!0)^T
ight\}$$
 in \mathbb{R}^3 are

Select one:

🔘 a. linearly dependent

b. linearly independent

The correct answer is: linearly independent

◄ Quiz 4 (6-6-2021)

Jump to...

Short Exam 1 ►

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Data retention summary

25/06/2021

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 4 / General / Quiz 4 (6-6-2021).

Started on	Sunday, 6 June 2021, 4:00 PM
State	Finished
Completed on	Sunday, 6 June 2021, 4:13 PM
Time taken	12 mins 56 secs
Grade	5 out of 6 (83 %)

Question 1

Correct

Mark 1 out of 1

The rank of
$$A=egin{pmatrix} 1&4&1&2&1\ 2&6&-1&2&-1\ 3&10&0&4&0 \end{pmatrix}$$
 is

Select one:

a. 0
b. 3
c. 1
d. 2

The correct answer is: 2

Question 2	
Incorrect	
Mark 0 out of 1	

If A is a 3 imes 4 matrix, then

Select one:

- \odot a. The columns of A are linearly independent
- \odot b. The rows of A are linearly dependent
- c. nullity $(A) \ge 1$ • d. Bank(A)-

• d.
$$Rank(A) = 3$$

×

The correct answer is: $\mathrm{nullity}(A)\!\geq\!1$

Question 3 Correct Mark 1 out of 1

Let $E = [2+x, 1-x, x^2+1]$ be an ordered basis for P_3 . If $p(x) = 3x^2+5x+4$, then the coordinate vector of p(x) with respect to E is

Select one:

 $\begin{array}{c} pmatrix2\\ \text{The correct answer is:} & -3\\ & 3[\texttt{\end?}]pmatrix \end{array}$

Question 4 Correct Mark 1 out of 1

If A is a 5 imes 7 matrix, then nullity of $A\ge 2$.

Select one:

🔵 a. False

🖲 b. True

The correct answer is: True

1

Question **5**

Correct Mark 1 out of 1

If A is an n imes n-matrix and for each $b\in \mathbb{R}^{n}$ the system Ax=b has a unique solution, then

Select one:

- \odot a. A is singular
- \odot b. A is nonsingular

$$^{\circ}$$
 c. nullity(A) = 1 $^{\circ}$ d. rank(A) = $n\!-\!1$

The correct answer is: A is nonsingular

Question 6	
Correct	
Mark 1 out of 1	

let A be a 4 imes 7-matrix, if the row echelon form of A has 2 nonzero rows, then dim(column space of A) is

Select one:

a. 5
b. 2
c. 3

🔵 d. 6

The correct answer is: 2

Jump to...

Quiz 3 🕨

Data retention summary

Dashboard / My courses	/ INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234-Meta ,	<u>General</u>	/ <u>Midterm Exam</u>
------------------------	--	----------------	-----------------------

Started on	Sunday, 9 May 2021, 11:38 AM
State	Finished
Completed on	Sunday, 9 May 2021, 1:03 PM
Time taken	1 hour 24 mins
Grade	25 out of 32 (78 %)

Question 1 Correct

Mark 1 out of 1

If A is nonsingular and B is singular n imes n-matrices, then AB is

Select one:

- 🔘 a. may or may not be singular
- b. singular
- 🔘 c. nonsingular

The correct answer is: singular

Question 2	
Correct	
Mark 1 out of 1	

One of the follwoing sets is a subspace of P_4

Select one:

- \bigcirc a. $S = \{f(x) \in P_4: f(0) = 1\}$
- \bigcirc b. $S=\{f(x)\in P_4: f(1)=1\}$
- C. $S = \{f(x) \in P_4: f(0) = 0, \text{ and } f'(0) = 2\}$

• d.
$$S = \{f(x) \in P_4: f(1) = 0\}$$

The correct answer is: $S\!=\!\{f(x)\!\in\!P_4\!\!:\!f(1)\!=\!0\}$

Question **3** Incorrect Mark 0 out of 1

If A is a 3 imes 3 matrix with $\det(A) = 2$. Then $\det(a \, d \, j(A)) =$

⊙ c. 4. ⊙ d. 8.

The correct answer is: 4.

Question 4	
Incorrect	
Mark 0 out of 1	
Let $S = \begin{cases} pmatrix x \\ y[\langle end?] pmatrix \in \mathbb{R}^2 \otimes \mathbb{X}^2 + \mathbb{Y}^2 = 0 \end{cases}$, then S is a subspace of \mathbb{R}^2 .	

Select one.

🔵 a. True

💿 b. False

The correct answer is: True

×

×

Que	stion	5

Incorrect Mark 0 out of 1

$$pmatrix 1 \& 0 \& -2 \& -1 \& |\& -2$$
 If the row echelon form of $(A|b)$ is $0 \& 1 \& 1 \& -1 \& |\& -1$ then the general form of $0 \& 0 \& 1 \& 1 \& |\& 1[\end?] pmatrix$

the solutions is given by

Select one:

• a.
$$x = pmatrix - 2 - \alpha$$

 $1 - \alpha$
 α
 $1[\end?]pmatrix$
• b. $x = pmatrix \alpha$
 $2 - \alpha$
 α
 $\alpha[\end?]pmatrix$
• c. $x = pmatrix - 2 - \alpha$
 $-1 + 2\alpha$
 $-\alpha$
 $\alpha[\end?]pmatrix$
• d. $x = pmatrix - \alpha$
 $-2 + 2\alpha$
 $1 - \alpha$
 $\alpha[\end?]pmatrix$

 $\begin{array}{c} x = pmatrix - \alpha \\ \text{The correct answer is:} & -2 + 2\alpha \\ 1 - \alpha \\ \alpha [\end?] pmatrix \end{array}$

×

Question 6

Mark 1 out of 1

Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (4,4,5)^T$. Then the third column of the matrix A is

Select one:

• a. $(1,1,4)^{T}$ • b. $(2,1,1)^{T}$ • c. $(1,-1,4)^{T}$ • d. $(4,-1,1)^{T}$

The correct answer is: $(1,1,4)^T$.

Question 7 Correct Mark 1 out of 1

$$\begin{array}{c} pmatrix1\&1\&2\\ {}^{\rm Let}A=& \begin{matrix} 0\&a\&3\\ 2\&0\&a-1\\ [\backslash {\rm end}?]pmatrix \end{matrix} . \mbox{ Then the values of a that make A singular are}$$

Select one:

• a. a = 2,3• b. a = 0• c. a = 1,2• d. a = 1,0

The correct answer is: $a\!=\!2,3$

~

Question 8	
Incorrect	
Mark 0 out of 1	
The vectors $\{x\!+\!1,\!2x^2\!+\!x\!+\!3,\!x^2\!+\!x\!+\!2\}$ form a spanning set for P 3. Select one: $@$ a. True	×
○ b. False	
The correct answer is: False	

Question 9	
Correct	
Mark 1 out of 1	

If A is a nonsingular 3 imes 3-matrix, then the reduced row echelon form of A has no row of zeros.

- Select one:
- 🔵 a. False
- 💿 b. True

The correct answer is: True

Question 10		
Correct		
Mark 1 out of 1		

 $\begin{array}{l} (A|b) = pmatrix1\& -1\& -1\&|\&2\\ "-2\&3\&1\&|\& -1\\ 1\&1\&\alpha\&|\&\beta[\end?]pmatrix \end{array}$

, then the system has infinite number of solutions if and only if

Select one:

• a.
$$\alpha \neq -3$$
 and $\beta \neq 8$
• b. $\alpha \neq -3$ and β any number
• c. $\alpha = -3$ and $\beta = 8$
• d. $\alpha = -3$ and $\beta \neq 8$

•

The correct answer is: lpha=-3 and eta=8

Question 11
Incorrect
Mark 0 out of 1

In the linear system $A \, x = b$, if $b = a_1 = a_2 + 3 \, a_4$ then the system $A \, x = b$ has infinite solutions.

Select one:

🔵 a. True

🔘 b. False

The correct answer is: True

Question 12 Correct Mark 1 out of 1

The adjoint of the matrix
$$egin{pmatrix} arraycc-1\&1\ 2\&4[\end?]array \end{pmatrix}$$
 is

Select one:

• a.
$$\begin{pmatrix} arraycc4\&-1\\ -2\&-1[\langle end?]array \end{pmatrix}$$

• b. $\begin{pmatrix} arraycc-1\&2\\ 1\&-4[\langle end?]array \end{pmatrix}$
• c. $\begin{pmatrix} arraycc-1\&-1\\ -2\&4[\langle end?]array \end{pmatrix}$
• d. $\begin{pmatrix} arraycc-1\&-2\\ -3\&-5[\langle end?]array \end{pmatrix}$
The correct answer is: $\begin{pmatrix} arraycc4\&-1\\ -2\&-1[\langle end?]array \end{pmatrix}$

Question 13 Correct

Mark 1 out of 1

The product of two elementary matrices is elementary

Select one:

🔵 a. True

🔘 b. False

The correct answer is: False

×

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25/06/2021

Question 14 Correct Mark 1 out of 1

If x_0 is a solution for the nonhomogeneous system Ax=b and x_1 is a solution of the homogeneous system Ax=0 . Then x_1+x_0 is a solution for

Select one:

a. the system A x = 2bb. the system A x = bc. the system A x = 0d. the system A x = A b

The correct answer is: the system $A\,x=b$

Correct Mark 1 out of 1	Question 15	
Mark 1 out of 1	Correct	
	Mark 1 out of 1	

If A,B are $n\! imes\! n$ nonsingular matrices, then $A^2\!-\!B^2\!=\!(A\!+\!B)(A\!-\!B)\cdot$

Select one:

🔵 a. True

🔘 b. False

The correct answer is: False

Question 16	
Correct	
Mark 1 out of 1	

If A is a singular matrix, then A can be written as a product of elementary matrices.

Select one:

🔵 a. True

🔘 b. False

The correct answer is: False

Question 17 Correct Mark 1 out of 1

$S = \left\{ A \in \mathbb{R}^{3 \times 3} \text{ s A is upper triangular} \right\} \text{ is a subspace of } \mathbb{R}^{3 \times 3}$

Select one:

- 🖲 a. True
- 🔵 b. False

The correct answer is: True

Qu	uestion 18
Co	prect
Ма	ark 1 out of 1

If A is a nonsingular n imes n matrix, $b \in \mathbb{R}^{\mathbb{N}}$, then

Select one:

- \odot a. The system $A\,x=b$ has only two solutions
- \odot b. The system $A\,x=b$ is inconsistent
- \odot c. The system $A\,x=b$ has infinitely many solutions
- \odot d. The system $A\,x=b$ has a unique solution

The correct answer is: The system $A\,x=b$ has a unique solution

Question 19	
Correct	
Mark 1 out of 1	

Let U be an n imes n-matrix in reduced row echelon form and U
eq I , then

Select one:

- \bigcirc a. \iint is the zero matrix
- \odot b. The system Ux = 0 has infinitely many solutions
- \odot c. The system Ux=0 has only the zero solution.
- \circ d. det(U) = 1

The correct answer is: The system Ux=0 has infinitely many solutions

Question 20 Correct Mark 1 out of 1

If
$$A$$
 is a 4×4 -matrix and $\begin{matrix} 3 \\ 0 \\ 1[\end?] pmatrix \end{matrix}$ is a solution to the system $Ax = 0$, then A is singular.

Select one:

🖲 a. True

🔵 b. False

The correct answer is: True

Question 21 Incorrect	
Mark 0 out of 1	
The vectors $\{(1,-1,-4)^T,(1,-1,1)^T,(1,-1,2)^T\}$ form a spanning set for \mathbb{R}^3 . Select one: \bigcirc a. False	
In the second se	×
The correct answer is: False	

Question 22
Correct
Mark 1 out of 1

If \mathcal{Y} , z are solutions to $A\,x=b$, then $\mathcal{Y}-z$ is a solution of the system $A\,x=0$.

Select one:

🔵 a. False

🔘 b. True

The correct answer is: True

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Question 23 Correct

Mark 1 out of 1

If E is an elementary matrix of type III, then ${}_{E}T$ is

Select one:

a. an elementary matrix of type III

- 🔘 b. not an elementary matrix
- c. an elementary matrix of type I
- 🔘 d. an elementary matrix of type II

The correct answer is: an elementary matrix of type III

Question 24			
Correct			
Mark 1 out of 1			

If
$$AB = AC$$
, and $|A| \neq 0$, then

Select one:

• a. $B \neq C$ • b. A = C• c. A = 0• d. B = C

The correct answer is: B = C.

Question 25

Incorrect Mark 0 out of 1

If A is a 4 imes 3 matrix such that N(A) = $\{0\}$, and b can be written as a linear combination of the columns of A , then

Select one:

- \odot a. The system $A\,x=b$ has exactly two solutions
- \odot b. The system $A\,x=b$ is inconsistent
- \odot c. The system $A\,x=b$ has infinitely many solutions
- \odot d. The system $A\,x=b$ has exactly one solution

The correct answer is: The system $A\,x=b$ has exactly one solution

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25/06/2021

Question **26**

Correct Mark 1 out of 1

Let V be a vector space, $\{v_1, v_2, ..., v_n\}$ a spanning set for V, then the vectors $\{v_1, v_2, ..., v_{n-1}\}$ form a spanning set for V.

Select one:

- 🖲 a. False
- 🔵 b. True

The correct answer is: False

Question 27

Correct Mark 1 out of 1

$$\begin{array}{c} A = p \, matrix 1 \, \& -1 \, \& 1 \\ {\rm Let} \, 3 \, \& -2 \, \& 2 \\ -2 \, \& 3 \, \& 3 [\end?] p \, matrix \end{array} \text{, then det}(A) = \end{array}$$

Select one:

a. 7
b. 6
c. 0
d. 9

The correct answer is: 6

Question 28	
Correct	
Mark 1 out of 1	

If A is a singular matrix, then A^T is also singular.

Select one:

- 🔘 a. True
- 🔵 b. False

The correct answer is: True

25/06/2021

Question 29		
Correct		
Mark 1 out of 1		
Any two $\eta, imes\eta$	n-nonsingular matrices are row equivalent.	
Any two $n imes n$)-nonsingular matrices are row equivalent.	
	J-nonsingular matrices are row equivalent.	

The correct answer is: True

Question 30	
Correct	
Mark 1 out of 1	

If A is a 4 imes 3-matrix, $b\in \mathbb{R}^4$, and the system $A\,x=b$ is consistent, then $A\,x=b$ has a unique solution.

Select one:

🔵 a. True

🔘 b. False

The correct answer is: False

Question 31	
Correct	
Mark 1 out of 1	

Any two $n \times n$ -singular matrices are row equivalent.

Select one:

🔵 a. True

🔘 b. False

The correct answer is: False

Question 32 Correct Mark 1 out of 1

Select one:

The correct answer is:
$$pmatrix1\&rac{-1}{2}\ rac{-5}{4}\&rac{3}{4}[\end?]pmatrix$$

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Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234-Meta / General / Midterm Exam

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Started onSunday, 9 May 2021, 11:30 AMStateFinishedCompleted onSunday, 9 May 2021, 12:50 PMTime taken1 hour 20 minsGrade30 out of 32 (94%)
```

Question 1 Correct

Mark 1 out of 1

In the $n \times n$ -linear system Ax = b, if A is singular and b is a linear combination of the columns of A then the system has

Select one:

- a. no solution
- b. infinitely many solutions
- c. a unique solution
- d. exactly two solutions

The correct answer is: infinitely many solutions

Question 2	
Correct	
Mark 1 out of 1	

If U,V are subspaces of a vector space W, then

Select one:

- \bigcirc a. $U \cap V$ may or may not be a subspace of W.
- \odot b. $U \cap V$ is a subspace of W.
- \bigcirc c. $U \cup V$ is a subspace of W.

The correct answer is: $U \cap V$ is a subspace of W.

Question 3	
Correct	
Mark 1 out of	1

If A and B are n imes n matrices such that Ax=Bx for some nonzero $x\in \mathbb{R}^n.$ Then

Select one:

- \bigcirc a. A B is nonsingular.
- \odot b. A-B is singular.
- \odot c. A and B are singular.
- \bigcirc d. A and B are nonsingular.

The correct answer is: A - B is singular.

Question 4	
Correct	
Mark 1 out of 1	

Any elementary matrix is nonsingular

Select one:

🖲 a. True

🛛 b. False

The correct answer is: True

Question 5	
Correct	
Mark 1 out of 1	

In the linear system Ax=b, if $b=a_1=a_2+3a_4$ then the system Ax=b has infinite solutions.

Select one:

- 🔘 a. False
- 💿 b. True

The correct answer is: True

Correct

Mark 1 out of 1

	(1)	0	-2	-1	-2	
If the row echelon form of $\left(A b ight)$ is	0	1	1	-1	-1	then the general form of the solutions is given by
	0/	0	1	1	1 /	

Select one:

a.
$$x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$
b.
$$x = \begin{pmatrix} -\alpha \\ -2 + 2\alpha \\ 1 - \alpha \\ \alpha \end{pmatrix}$$
c.
$$x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$$
d.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$$

The correct answer is:
$$x=egin{pmatrix} -lpha\\ -2+2lpha\\ 1-lpha\\ lpha \end{pmatrix}$$

Question 7

Correct

Mark 1 out of 1

Let
$$U=iggl\{iggl({x} \ yiggr): y=x+1iggr\}.$$
 Then U is a subspace of \mathbb{R}^2

Select one:

- 🔘 a. True
- 💿 b. False

The correct answer is: False

Question 8

Correct

Mark 1 out of 1

If
$$(A|b)=egin{pmatrix} 1&1&2&|&4\\ 2&-1&2&|&6\\ 0&3&2&|&1 \end{pmatrix}$$
 is the augmented matrix of the system $Ax=b$ then the system has no solution

Select one:

🖲 a. True

🔵 b. False

The correct answer is: True

Question 9	
Correct	
Mark 1 out of 1	

If A = LU is the LU-factorization of a matrix A, and A is singular, then

Select one:

- \odot a. L and U are both singular
- \odot b. L is singular and U is nonsigular
- \odot c. U is singular and L is nonsigular
- \odot d. L and U are both nonsingular

The correct answer is: U is singular and L is nonsigular

Question 10		
Correct		
Mark 1 out of 1		

Any two n imes n-singular matrices are row equivalent.

Select one:

🔵 a. True

b. False

The correct answer is: False

	•
Question 11	
Correct	
Mark 1 out of 1	

The vectors $\{(1, -1, 1)^T, (1, -1, 2)^T, (1, -1, 1)^T\}$ form a spanning set for \mathbb{R}^3 .

Select one:

- 💿 a. False
- 🔵 b. True

The correct answer is: False

Question 12	
Correct	
Mark 1 out of 1	

If A is a 4 imes 4 matrix with $\det(A)=-2.$ Then $\det(adj(A))=$

Select one:

○ a. -2.

- b. -8.
- oc. 8.
- Od. 2.

The correct answer is: -8.

Question 13			
Correct			
Mark 1 out of 1			

Let V be a vector space, $\{v_1, v_2, \ldots, v_n\}$ a spanning set for V, then the vectors $\{v_1, v_2, \ldots, v_{n-1}\}$ form a spanning set for V.

Select one:

- a. False
- 🔘 b. True

The correct answer is: False

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Question 14				
Correct				
Mark 1 out of 1				

If AB=0 , where A and B are n imes n nonzero matrices. Then

Select one:

- \bigcirc a. either A or B is nonsingular
- \odot b. either A=0 or B=0
- \odot c. both A, B are singular.
- \bigcirc d. both A, B are nonsingular.

The correct answer is: both A, B are singular.

Question 15	
Correct	
Mark 1 out of 1	
If y , z are solutions to $Ax=b$, then $rac{1}{4}y+rac{3}{4}z$ is a solution of the system $Ax=b$.	
Select one:	

Select one:

💿 a. True

🔵 b. False

The correct answer is: True

Question 16	
Incorrect	
Mark 0 out of 1	

One of the follwoing sets is a subspace of P_4

Select one:

a. $S = \{f(x) \in P_4 : f(0) = 1\}$ b. $S = \{f(x) \in P_4 : f(1) = 0\}$ c. $S = \{f(x) \in P_4 : f(0) = 0, \text{and } f'(0) = 2\}$ d. $S = \{f(x) \in P_4 : f(1) = 1\}$

The correct answer is: $S = \{f(x) \in P_4 : f(1) = 0\}$

X

6/25/2021

Correct	
Mark 1 out of 1	

If A is a singular matrix, then the system Ax=b has infinite number of solutions

Se	lect	one:
00	001	01101

- 🔍 a. False
- 🔵 b. True

The correct answer is: False

Question 18 Correct Mark 1 out of 1

If
$$(2A)^{-1}=egin{pmatrix} 3&2\5&4 \end{pmatrix}$$
 , then $A=$

Select one:

$$\begin{array}{c} a. \begin{pmatrix} 8 & -4 \\ -10 & 6 \end{pmatrix} \\ \hline \\ b. \begin{pmatrix} 1 & \frac{-1}{2} \\ \frac{-5}{4} & \frac{3}{4} \end{pmatrix} \\ \hline \\ c. \begin{pmatrix} 4 & -2 \\ -5 & 3 \end{pmatrix} \\ \hline \\ d. \begin{pmatrix} 2 & -1 \\ \frac{-5}{2} & \frac{3}{2} \end{pmatrix}$$

The correct answer is: $\begin{pmatrix} 1 & \frac{-1}{2} \\ \frac{-5}{4} & \frac{3}{4} \end{pmatrix}$

6/25/2021

Correct Mark 1 out of 1	Question 19		
Mark 1 out of 1	Correct		
	Mark 1 out of 1		

If A is a nonsingular 3 imes 3-matrix, then the reduced row echelon form of A has no row of zeros.

Select or	ne:	ect one:	elect one:	one:	one:	one:	one:	t one:	one:	one:	ne:	ne:	ne:	e:	:	
🖲 a. T	True	a. True	🖲 a. True	True	True	True	True	. True	True	True	True	rue	υe	Je	е	è
🔵 b. F	False	b. False	🔵 b. Fals	False	False	False	False	. False	False	False	False	alse	alse	alse	se	е

The correct answer is: True

Question 20	
Correct	
Mark 1 out of 1	

If E is an elementary matrix of type III, then E^T is

Select one:

- 🔘 a. not an elementary matrix
- b. an elementary matrix of type III
- c. an elementary matrix of type I
- O d. an elementary matrix of type II

The correct answer is: an elementary matrix of type III

Question 21	
Correct	
Mark 1 out of 1	

Let
$$A=egin{pmatrix} 1&1&0\\ 1&a&1\\ 1&1&2 \end{pmatrix}$$
 . the value(s) of a that make A nonsingular

Select one:

a. a = 1b. $a = \frac{1}{2}$ c. $a \neq \frac{1}{2}$ d. $a \neq 1$

The correct answer is: a
eq 1

Question 22

Correct

Mark 1 out of 1

Let
$$A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&3&3 \end{pmatrix}$$
 , then $\det(A)=$

Select one:

a. 9
b. 6
c. 7
d. 0

The correct answer is: 6

Question 23	
Correct	
Mark 1 out of 1	

If A is a 4 imes 3-matrix, $b\in\mathbb{R}^4$, and the system Ax=b is consistent, then Ax=b has a unique solution.

Select one:

💿 a. False

🔵 b. True

The correct answer is: False

Correct

Mark 1 out of 1

The adjoint of the matrix
$$egin{pmatrix} -5 & -2 \ -3 & -1 \end{pmatrix}$$
 is

Select one:

• a.
$$\begin{pmatrix} -5 & 3 \\ 2 & -1 \end{pmatrix}$$

• b. $\begin{pmatrix} 5 & -3 \\ -2 & 1 \end{pmatrix}$
• c. $\begin{pmatrix} -1 & 2 \\ 3 & -5 \end{pmatrix}$
• d. $\begin{pmatrix} -1 & -2 \\ -3 & -5 \end{pmatrix}$

The correct answer is:
$$\begin{pmatrix} -1 & 2 \\ 3 & -5 \end{pmatrix}$$

Question 25

Incorrect Mark 0 out of 1

The vectors $\{x+1, x^2+2x+1, x^2+x+1\}$ form a spanning set for P_3 .

Select one:

- 🖲 a. False
- 🔵 b. True

The correct answer is: True

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Question 26

Correct

Mark 1 out of 1

Let
$$S=\{inom{x}{y}\in \mathbb{R}^2: x=y+1\}$$
 , then S is a subspace of $\mathbb{R}^2.$

Select one:

- 🔵 a. True
- 💿 b. False

The correct answer is: False

Question 27	
Correct	
Mark 1 out of 1	

If A is an n imes n-symmetric matrix, then A^2 is symmetric.

Select one:

🖲 a. True

🔵 b. False

The correct answer is: True

Question 28 Correct Mark 1 out of 1

	(1				
If $(A b) =$	-2	3	1	-1	, then the system has only one solution if and only if
	1	1	lpha	β)	

Select one:

a. \$\alpha = -3\$ and \$\beta \neq 8\$
b. \$\alpha \neq -3\$ and \$\beta\$ any number
c. \$\alpha \neq -3\$ and \$\beta \neq 8\$
d. \$\alpha = -3\$ and \$\beta = 8\$

The correct answer is: lpha
eq -3 and eta any number

Question 29									
Correct									
Mark 1 out of	1								

Let $(1,2,1)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (7,2,3)^T$. Then the third column of the matrix A is

Select one:

a. (-1, -2, -2)^T.
b. (1, 2, 2)^T.
c. (1, 1, 0)^T.
d. (4, -1, 1)^T.

The correct answer is: $(4, -1, 1)^T$.

Question 30	
Correct	
Mark 1 out of 1	

If A is a nonsingular n imes n matrix, $b \in \mathbb{R}^n$, then

Select one:

- \bigcirc a. The system Ax = b has infinitely many solutions
- \odot b. The system Ax=b has a unique solution
- \bigcirc c. The system Ax = b is inconsistent
- \bigcirc d. The system Ax = b has only two solutions

The correct answer is: The system Ax = b has a unique solution

Question 31	
Correct	
Mark 1 out of 1	

The product of two elementary matrices is elementary

Select one:

💿 a. False

🔵 b. True

The correct answer is: False

Question 32	
Correct	
Mark 1 out of 1	
Any two $n imes n$ -nonsingular matrices are row equivalent.	
Select one:	
🔿 a. False	
b. True	✓
The correct answer is: True	
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Data retention summary

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Started onSunday, 9 May 2021, 11:34 AMStateFinishedCompleted onSunday, 9 May 2021, 12:48 PMTime taken1 hour 13 minsGrade28 out of 32 (88%)
```

Question 1

Correct Mark 1 out of 1

If A is a symmetric n imes n-matrix and P any n imes n-matrix, then $P^T A P$ is

Select one:

- 🔘 a. singular
- b. not defined
- c. not symmetric
- In d. symmetric

The correct answer is: symmetric

Question 2	
Incorrect	
Mark 0 out of 1	

$(1,1,3)^T$ is a linear combination of the vectors $(1,2,3)^T, (1,4,1)^T, (2,3,1)^T$

Select one:

- 🔵 a. True
- b. False

The correct answer is: True

×

Question 3
Incorrect
Mark 0 out of

One of the follwoing sets is a subspace of P_4

Select one:

a. $S = \{f(x) \in P_4 : f(1) = 0\}$ b. $S = \{f(x) \in P_4 : f(0) = 0, \text{and } f'(0) = 2\}$ c. $S = \{f(x) \in P_4 : f(0) = 1\}$ d. $S = \{f(x) \in P_4 : f(1) = 1\}$

The correct answer is: $S=\{f(x)\in P_4: f(1)=0\}$

Correct	
Mark 1 out of 1	

Let
$$U = igg\{ igg(egin{array}{c} x \ y \end{pmatrix} : y = x + 1 igg\}.$$
 Then U is a subspace of \mathbb{R}^2

Select one:

💿 a. False

🔵 b. True

The correct answer is: False

Question 5 Correct Mark 1 out of 1

If
$$A$$
 is a $3 imes 3$ -matrix and the system $Ax = \begin{pmatrix} 5 \\ 1 \\ 3 \end{pmatrix}$ has a unique solution, then the system $Ax = \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$

Select one:

- a. is inconsistent
- b. has infinitely many solutions
- c. has only the zero solution.

The correct answer is: has only the zero solution.

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6/25/2021

Question 6	
Mark 1 out of 1	
If A is an $n imes n$ -symmetric matrix, then A^2 is symmetric.	
Select one:	
Irue	~
 b. False 	
The correct answer is: True	
-	
Question 7	
Mark 0 out of 1	
If S is a subset of a vector space V , and $0\in S$, then S is a subspace of V .	
Select one:	
a. True	×
🔘 b. False	
The correct answer is: False	
Question 8	
Mark 1 out of 1	

If A and B are singular matrices, then A+B is also singular.

Select one:

🔵 a. True

b. False

The correct answer is: False

1

Question 9

Correct

Mark 1 out of 1

The adjoint of the matrix $\begin{pmatrix} -2 & -1 \\ 1 & -4 \end{pmatrix}$ is

Select one:

 $\begin{array}{c} \text{a.} \begin{pmatrix} -1 & 2 \\ 4 & 1 \end{pmatrix} \\ \text{b.} \begin{pmatrix} -4 & 1 \\ -1 & -2 \end{pmatrix} \\ \text{c.} \begin{pmatrix} 4 & 1 \\ -1 & 2 \end{pmatrix} \\ \text{d.} \begin{pmatrix} 2 & 1 \\ -1 & 4 \end{pmatrix}$

The correct answer is:
$$\begin{pmatrix} -4 & 1 \\ -1 & -2 \end{pmatrix}$$

Question 10	
Correct	
Mark 1 out of 1	

Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (4,3,5)^T$. Then the third column of the matrix A is

Select one:

- a. $(1,3,-4)^T$.
- \odot b. $(1,-3,4)^T.$
- \bigcirc c. $(4, -1, 1)^T$.
- d. $(1,0,4)^T$.

The correct answer is: $(1, 0, 4)^T$.

Question 11
Correct
Mark 1 out of 1

If A is a 3 imes 3 matrix such that det(A)=2, then $\det(3A)=6$

Select one:

- 🔵 a. True
- b. False

The correct answer is: False

Question 12	
Correct	
Mark 1 out of 1	

If
$$A = \begin{pmatrix} 2 & 1 & -1 \\ -2 & 0 & 2 \\ 4 & 2 & 3 \end{pmatrix}$$
 then the lower triangular matrix L in the LU -facrorization of A is given by

Select one:

• a.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ -1 & 1 & 0 \\ 2 & 0 & 1 \end{pmatrix}$$
• b.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ -2 & 0 & 1 \end{pmatrix}$$
• c.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ 2 & 0 & 1 \end{pmatrix}$$
• d.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ -1 & 1 & 0 \\ -2 & 0 & 1 \end{pmatrix}$$

The correct answer is:
$$L = \begin{pmatrix} 1 & 0 & 0 \\ -1 & 1 & 0 \\ 2 & 0 & 1 \end{pmatrix}$$

Question 13
Correct
Mark 1 out of 1

In the linear system Ax=b, if $b=a_1=a_2+3a_4$ then the system Ax=b has infinite solutions.

Select one:	
In a. True	✓
• b. False	

The correct answer is: True

Question 14	
Correct	
Mark 1 out of 1	

Any two n imes n-nonsingular matrices are row equivalent.

Select one:

🖲 a. True

🔘 b. False

The correct answer is: True

Question 15	
Correct	
Mark 1 out of 1	

If A,B are n imes n-skew-symmetric matrices(A is skew symmetric if $A^T=-A$), then AB+BA is symmetric

Select one:

🔵 a. False

💿 b. True

The correct answer is: True

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Question 16

Correct

Mark 1 out of 1

Let
$$A = \begin{pmatrix} 1 & 2 & 3 & 0 \\ 1 & 1 & 2 & 1 \\ 2 & 3 & 5 & 1 \end{pmatrix}$$
 and $b = \begin{pmatrix} 2 \\ 1 \\ 4 \end{pmatrix}$. The system $Ax = b$

Select one:

- a. has a unique solution
- b. has infinitely many solutions
- c. has exactly three solutions.
- d. is inconsistent

The correct answer is: is inconsistent

Question 17	
Correct	
Mark 1 out of 1	

If u,v,w are nonzero vectors in \mathbb{R}^2 , then $w\in \mathrm{span}(u,v)$

Select one:

💿 a. False

🔵 b. True

The correct answer is: False

Correct Mark 1 out of 1

Let
$$A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&6&4 \end{pmatrix}$$
 , then $\det(A)=$

Select one:

- a. 9
 b. 10
 c. 0
- i d. 5

~

The correct answer is: 10

Incorrect

Mark 0 out of 1

If the row echelon form of (A|b) is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 1 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

a.
$$x = \begin{pmatrix} -\alpha \\ -2 + 2\alpha \\ 1 - \alpha \\ \alpha \end{pmatrix}$$
b.
$$x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$$
c.
$$x = \begin{pmatrix} -2 - \alpha \\ 1 - \alpha \\ \alpha \\ 1 \end{pmatrix}$$
d.
$$x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$

The correct answer is:
$$x=egin{pmatrix} -lpha\\ -2+2lpha\\ 1-lpha\\ lpha\end{pmatrix}$$

Question 20	
Correct	
Mark 1 out of 1	

If E is an elementary matrix then one of the following statements is false

Select one:

- \odot a. E^{-1} is an elementary matrix.
- \odot b. E is nonsingular.
- \odot c. E is diagonal matrix.
- \bigcirc d. E^T is an elementary matrix.

The correct answer is: E is diagonal matrix.

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Question 21		
Correct		
Mark 1 out of 1		

If A is a 3 imes 3 matrix with $\det(A)=2.$ Then $\det(adj(A))=$

Select one:			
	a.	-2.	
	b.	-8.	

- c. 8.
- d. 4.

The correct answer is: 4.

Question 22	
Correct	
Mark 1 out of 1	

If x_0 is a solution for the nonhomogeneous system Ax = b and x_1 is a solution of the homogeneous system Ax = 0. Then $x_1 + x_0$ is a solution for

Select one:

- \odot a. the system Ax=b
- \odot b. the system Ax=Ab
- \odot c. the system Ax=0
- \bigcirc d. the system Ax=2b

The correct answer is: the system Ax=b

Correct

Mark 1 out of 1

If $(A|b) = \begin{pmatrix} 1 & -1 & -1 & | & 2 \\ -2 & 3 & 1 & | & -1 \\ 1 & 1 & lpha & | & \beta \end{pmatrix}$, then the system is inconsistent if and only if

Select one:

a. \$\alphi \neq -3\$ and \$\beta\$ any number
b. \$\alpha = -3\$ and \$\beta \neq 8\$
c. \$\alpha \neq -3\$ and \$\beta \neq 8\$
d. \$\alpha = -3\$ and \$\beta = 8\$

The correct answer is: lpha=-3 and eta
eq 8

Question 24	
Correct	
Mark 1 out of 1	

The vectors $\{(1,-1,1)^T,(1,-1,2)^T,(1,-1,1)^T\}$ form a spanning set for \mathbb{R}^3 .

Select one:

a. False

🔵 b. True

The correct answer is: False

Question 25 Correct Mark 1 out of 1

Let
$$S=\{inom{x}{y}\in \mathbb{R}^2: x=rac{1}{y}\}$$
 , then S is a subspace of $\mathbb{R}^2.$

Select one:

💿 a. False

🔵 b. True

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QUUU	
Correc	:†
Mark 1	out of 1

Let V be a vector space, $\{v_1, v_2, \ldots, v_n\}$ a spanning set for V, and $v \in V$, then the vectors $\{v_1, v_2, \ldots, v_n, v\}$ form a spanning set for V.

Select one:

💿 a. True

🔵 b. False

The correct answer is: True

Question 27	
Correct	
Mark 1 out of 1	

If AB=AC, and |A|
eq 0, then

Select one:

o a. A = 0o b. A = Co c. B = C. o d. $B \neq C$

The correct answer is: B = C.

Question 28			
Correct			
Mark 1 out of 1			

If
$$(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 0 & 3 & 2 & | & 1 \end{pmatrix}$$
 is the augmented matrix of the system $Ax = b$ then the system has no solution

Select one:

🖲 a. True

🔘 b. False

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Question 29
Correct
Mark 1 out of 1

Let A be a 3 imes 4 matrix which has a row of zeros, and let B be a 4 imes 4 matrix , then AB has a row of zeros.

Select one:

- 🔘 a. False
- 💿 b. True

The correct answer is: True

Question 30	
Correct	
Mark 1 out of 1	

If A is a 3 imes 5 matrix, then the system Ax=0

Select one:

- a. is inconsistent
- b. has only the zero solution
- c. has infinitely many solutions
- d. has no solution.

The correct answer is: has infinitely many solutions

Question 31	
Correct	
Mark 1 out of 1	

If AB=0, where A and B are n imes n nonzero matrices. Then

Select one:

- \odot a. both A, B are singular.
- \bigcirc b. either A or B is nonsingular
- \bigcirc c. either A = 0 or B = 0
- \bigcirc d. both A, B are nonsingular.

The correct answer is: both A, B are singular.

uestion 32		
prrect		
ark 1 out of 1		
The vectors $\{x+1,x^2+x+3,$	$x^2+x+2\}$ form a spanning set for $P_3.$	
Select one:		
🔿 a. False		
b. True		~
The correct answer is: True		
Jump to		

Announcements ►

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 3 / General / Practice ch4

```
        Started on
        Friday, 25 June 2021, 1:30 PM

        State
        Finished

        Completed on
        Friday, 25 June 2021, 1:30 PM

        Time taken
        10 secs

        Marks
        0.00/13.00

        Grade
        0.00 out of 10.00 (0%)
```

Question **1**

Not answered

Marked out of 1.00

Let L be a linear transformation from R^5 into R^3 with dim(Ker(L)) = 2. Then $Kerl(L) = \{0\}$

Select one:

True

False

The correct answer is 'False'.

Question 2 Not answered

Marked out of 1.00

If $L:\mathbb{R}^2
ightarrow\mathbb{R}^2$ is the

linear transformation defined by $L((x,y)^t) = (x-y,x+y)^t$, then $(2,3)^t$ is in ImL.

Select one:

True

False

Not answered Marked out of 1.00

Let $L:\mathbb{R}^2 o\mathbb{R}^3$ be defined by $L((x,y)^T)=((x-y,xy,2x)^T)$, then L is a linear transformation.

Select one:

O True

False

The correct answer is 'False'.

Question 4	
Not answered	
Marked out of 1.00	

Suppose that T:V o W is a linear transformation whose 2 imes 2 matrix representation A, and rank(A)=2 . Then T is one to one

Select one:

True

False

The correct answer is 'True'.

Question **5** Not answered

Marked out of 1.00

If $L: \mathbb{R}^2 o \mathbb{R}^2$ is the

linear transformation defined by $L((x,y)^t) = (x-y,x+y)^t$, then L is one to one

Select one:

O True

False

Not answered Marked out of 1.00

Let L be a linear transformation from R^5 into R^3 with dim(Ker(L))=2. Then $Rang(L)=R^3$

Select one:

O True

False

The correct answer is 'True'.

Question **7** Not answered Marked out of 1.00

Suppose that T:V o W is a linear transformation whose 2 imes 2 matrix representation A, and rank(A)=2 . Then $KerT=\{0\}$ to one

Select one:

True

False

The correct answer is 'True'.

Question 8

Not answered Marked out of 1.00

Suppose that T:V
ightarrow W is a linear transformation whose

2 imes 2 matrix representation A, and rank(A)=2 . Then T is onto

Select one:

O True

False

Not answered Marked out of 1.00

Suppose that T:V o W is a linear transformation whose

2 imes 2 matrix representation A, and rank(A)=2 . Then $\operatorname{Range} T=W$

Select one:

O True

False

The correct answer is 'True'.

Question 10	
Not answered	
Marked out of 1.00	

Let

 $L:\mathbb{R}^2 o\mathbb{R}^3$ be defined by $L((x,y)^T)=((x-y,1,2x)^T)$, then L is a linear transformation.

Select one:

O True

False

The correct answer is 'False'.

Question 11 Not answered Marked out of 1.00

Let *L* be a linear transformation from R^5 into R^3 with dim(Ker(L)) = 2. Then *L* is onto

Select one:

True

False

Question 12 Not answered

Marked out of 1.00

Let L be a linear transformation from $R^{\,5}$ into $R^{\,3}$ with $dim(Ker(L))\!=\!2.$ Then $kerl(L)\!=\!R^5$

Select one:

True

False

The correct answer is 'False'.

Question 13 Not answered Marked out of 1.00

Let $L: \mathbb{R}^3 \to \mathbb{R}^3$ be the linear transformation defined as L((a,b,c)) = (a,a-b,c-b), then $\dim(\ker(L))\!=\!0$

Select one:

True

False

The correct answer is 'True'.

◄ Practice -chapter2

Jump to...

Practice-chaptet3 ►

Data retention summary

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```
        Started on
        Monday, 7 June 2021, 9:13 PM

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        Finished

        Completed on
        Monday, 7 June 2021, 9:14 PM

        Time taken
        45 secs

        Marks
        13.00/21.00

        Grade
        6.19 out of 10.00 (62%)
```

Question **1** Correct Mark 1.00 out of 1.00

If A is a $3 imes 3\,$ singular matrix with only one eigenvalue, then the characteristic equation of $\,A$ is $\,x^3\,{=}\,0\,$

Select one:

🔍 True 🗸

False

The correct answer is 'True'.

Question 2	
Correct	
Mark 1.00 out of 1.00	

If A is a $3 imes 3\,$ matrix such that 1,1-i are eigenvalues of A , then traceA=2-i

Select one:

O True

False

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Question 3
Correct
Mark 1.00 out of 1.00

If λ is an eigenvalue of a square matrix A with $alg(\lambda)=n$, then

 $gem(\lambda) = n$.

Select one:

O True

False

The correct answer is 'False'.

Question 4	
Incorrect	
Mark 0.00 out of 1.00	

Let $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & -1 & 0 \\ 2 & 3 & 7 \end{bmatrix}$, then the eigenvalues of A^{100} are 1, -1, 7Select one: True X
False

The correct answer is 'False'.

Questio	ion 5	
Incorre	ect	
Mark 0	0.00 out of 1.00	

If λ is an eigenvalue of a matrix A, then the system $(A-\lambda I)x=0$ has a nontrivial solution.

Select one:

O True

🔍 False 🗙

Question 6
Incorrect
Mark 0.00 out of 1.00

If A is a 3 imes 3 matrix such that Ax=0 for a nonzero x, then the characteristic equation of A could be $x^3+x=0$

Select one:

O True

False ×

The correct answer is 'True'.

Question 7		
Correct		
Mark 1.00 out of 1.00		
Any singular matrix has 0 as an eigenvalue		
Select one:		
True		
○ False		
The correct answer is 'True'.		
Question 8		
Correct		

Correct Mark 1.00 out of 1.00

If A is a 3 imes 3 singular matrix such that $\lambda_1=1-i$ is an eigenvalue of A , then the other eigenvalues of A are 0,1+i

Select one:

🔍 True 🗸

False

Question 9	
Incorrect	
Mark 0.00 out of 1.00	

If an n imes n matrix A is singular then A must have n linearly independent eigenvectors

Select one:

🔍 True 🗙

False

The correct answer is 'False'.

Question 10	
Incorrect	
Mark 0.00 out of 1.00	

If A is a 3 imes 3 singular matrix such that $\lambda_1=1-i$ is an eigenvalue of A, then A is diagonalizable

Select one: True

False ×

The correct answer is 'True'.

Question 11 Incorrect Mark 0.00 out of 1.00

If A is a 3 imes 3 singular matrix such that $\lambda_1=1-i$ is an eigenvalue of A , then ${ m trace}(A)=2$

Select one:

O True

False ×

Question 12 Correct Mark 1.00 out of 1.00

If A, B are similar matrices , then det(A) = det(B)

Select one:

🖲 True 🗸

False

The correct answer is 'True'.

Question 13	
Correct	
Mark 1.00 out of 1.00	

If A is a 3 × 3 singular matrix such that $\lambda_1 = 1 - i$ is an eigenvalue of A, then A is defective

Select one:

True

False

The correct answer is 'False'.

Question **14** Correct Mark 1.00 out of 1.00

If an n imes n matrix A is nonsingular then A must

have η linearly independent eigenvectors

Select one:

O True

False

Question **15** Correct Mark 1.00 out of 1.00

If A is a 3×3 singular matrix such that $\lambda_1 = i$ is an eigenvalue of A, then the characteristic polynomial of A is $x^3 + x$

Select one:

True

False

The correct answer is 'True'.

Question 16	
Correct	
Mark 1.00 out of 1.00	

If A is a $3\! imes\!3$ matrix such that $A\,x=0$ for a nonzero x , then A is singular



The correct answer is 'True'.

Question **17** Correct Mark 1.00 out of 1.00

If A is a $3\! imes\!3$ matrix such that $1,1\!-\!i$ are eigenvalues of A , then $|A|\!=\!1\!-\!i$

Select one: True

False

Question	18
Incorrect	

Mark 0.00 out of 1.00

If λ is a simple eigenvalue

(i.e. of algebraic multiplicity 1) of a square matrix A, then λ can have more than one linearly independent eigenvectors.

Select one:

🔍 True 🗙

False

The correct answer is 'False'.

Question 19				
Correct				
Mark 1.00 out of 1.00				
Any matrix has () c Select one:	s an eigenvalue is si	ngular		
🔍 True 🗸				

The correct answer is 'True'.

Question **20** Correct Mark 1.00 out of 1.00

Similar matrices have the same eigenvectors.

Select one:

O True

False

Incorrect Mark 0.00 out of 1.00

If A is a 3 imes 3 singular matrix such that λ_1 = $2,\lambda_2$ = -2 are eigenvalues of A , then trace(A) = 0

Select one:

O True

False ×

The correct answer is 'True'.

◄ Practice-chaptet3

Jump to...

recording7 ►

6/25/2021

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 3 / General / Practice - chapter2

```
        Started on
        Friday, 25 June 2021, 1:27 PM

        State
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        Friday, 25 June 2021, 1:28 PM

        Time taken
        1 min 4 secs

        Marks
        4.00/21.00

        Grade
        2.10 out of 11.00 (19%)
```

Question $\mathbf{1}$

Incorrect

Mark 0.00 out of 1.00

Let A be a square and nonsingular n imes n matrix.

If | adjA | = |A| then A is 2×2 .

Select one:

🔍 True 🗙

False

The correct answer is 'False'.

Question 2
Incorrect
Mark 0.00 out of 1.00

Let E be an elementary matrix of type III, then |E|=1 .

Select one:

O True

False ×

Question **3** Correct Mark 1.00 out of 1.00

If AB = AC , and $|A| \neq 0$, then B = C .

Select one:

True

False

The correct answer is 'True'.

Question 4 Correct

Mark 1.00 out of 1.00

Cramer's rule is very practical in solving linear systems.

Select one:

True

🔍 False 🗸

Correct Mark 1.00 out of 1.00

If det(A) = det(B) , then A = B.

Select one:

True

False

The correct answer is 'False'.

Question 6	
Incorrect	
Mark 0.00 out of 1.00	

Let E be an elementary matrix of type I, then |E|=1.

Select one:

🔍 True 🗙

False

The correct answer is 'False'.

Question **7** Not answered Marked out of 1.00

If A is row equivalent to I then $\det(A)=1$.

Select one:

True

False

Question 8 Correct

Mark 1.00 out of 1.00

Let A, B be n imes n equivalent matrices. Then |A| = |B| .

Select one:

True

False

The correct answer is 'False'.

Question 9	
Not answered	
Marked out of 2.00	

An n imes n matrix A is invertible if

Select one:

- \odot a. |A|
 eq 0
- \odot b. |A|=0
- oc. all
- \bigcirc d. Ax = 0 has a nonzero solution

The correct answer is: |A|
eq 0

Not answered Marked out of 2.00

Let A be a 3 imes 3 matrix such that Ax=b has infinite solutions. Then

Select one:

 \bigcirc a. A is nonsingular

- \odot b. |A|
 eq 0
- \bigcirc c. |A| = 0
- \bigcirc d. A is row equivalent to the identity

The correct answer is: |A|=0

Question 11 Not answered

Marked out of 1.00

If A and B are invertible, then det(A) = det(B).

Select one:

O True

False

Not answered

Marked out of 1.00

Let A be 3 imes 3 matrix such that |A|=5 . Then Ax=0 has only the zero solution.

Select one:

True

False

The correct answer is 'True'.

Question 13	
Not answered	
Marked out of 1.00	

If A is singular, then $|adj(A)| \neq 0$.

Select one:

True

False

The correct answer is 'False'.

Question 14

Not answered Marked out of 1.00

The adjoint method (cofactor method) is more practical than row operations to find the inverse of a square matrix.

Select one:

O True

False

Not answered Marked out of 2.00

If A an 3 imes 3 matrix such that Ax=0 for a nonzero x , then

Select one:

 \bigcirc a. |A|=0

 \odot b. A is nonsingular

 \odot c. A is row equivalent to the identity

 \bigcirc d. $|A| \neq 0$

The correct answer is: |A| = 0

Question 16 Not answered

Marked out of 1.00

```
Let A be n \times n. Then |a d j(A)| = |A|.
```

Select one:

True

False

DC Question 17

Not answered Marked out of 2.00

Let A, B be 2×2 matrix |A| = |2B| = 4. Then $|(2AB)^{-1}| = 4$

Select one:

a. 4
b. 16
c. <u>1</u>/<u>16</u>
d. 8

The correct answer is: $\frac{1}{16}$

Short exam 1 -Sunday 11-4-2021

Jump to...

Practice ch4 ►

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 3 / Quizez / Practice-chapter 1

```
        Started on
        Monday, 7 June 2021, 9:10 PM

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        Monday, 7 June 2021, 9:11 PM

        Time taken
        57 secs

        Marks
        4.00/57.00

        Grade
        0.70 out of 10.00 (7%)
```

Question 1

Incorrect

Mark 0.00 out of 1.00

```
The LU decomposition of the matrix \begin{bmatrix} 2 & 4 & 2 \\ 1 & 5 & 2 \\ 4 & -1 & 9 \end{bmatrix} is
```

Select one:

a.
$$L = \begin{bmatrix} 1 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 \\ -2 & -3 & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 4 & 2 \\ 0 & 3 & 1 \\ 0 & 0 & 8 \end{bmatrix}$$
b.
$$L = \begin{bmatrix} 1 & 0 & 0 \\ \frac{1}{2} & 1 & 0 \\ 2 & -3 & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 4 & 2 \\ 0 & 3 & 1 \\ 0 & 0 & 8 \end{bmatrix}$$
c.
$$L = \begin{bmatrix} 1 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 \\ -\frac{1}{2} & 1 & 0 \\ 2 & 3 & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 4 & 2 \\ 0 & 3 & 1 \\ 0 & 0 & 8 \end{bmatrix}$$

d. None

The correct answer is:
$$L = \begin{bmatrix} 1 & 0 & 0 \\ \frac{1}{2} & 1 & 0 \\ 2 & -3 & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 4 & 2 \\ 0 & 3 & 1 \\ 0 & 0 & 8 \end{bmatrix}$$

×

Question 2 Correct Mark 1.00 out of 1.00

If z_1 is a solution of the non-homogeneous system Ax = band z_0 is a solution of the homogeneous system Ax = 0. Then $z_0 + z_1$ is a solution of Ax = b.

Select one:

True

False

The correct answer is 'True'.

Question 3	
Incorrect	
Mark 0.00 out of 1.00	

If the coefficient matrix of the system **Ax** = **0** is nonsingular then the system has unique solution

Select one:

O True

False ×

The correct answer is 'True'.

Question 4
Correct
Mark 1.00 out of 1.00

In the linear system Ax=b, if $b=a_1-a_2+3a_4=a_1$ then the system has infinite solutions.

Select one:

🖲 True 🗸

False

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Question 5							
Correct							
Mark 1.00 out of 1.00							
If the system Ax = b is	s inconsistent then b is	not a linear com	nbinations of th	e columns of	Α.		
If the system Ax = b is Select one:	s inconsistent then b is	not a linear con	nbinations of th	e columns of	A .		
	s inconsistent then b is	not a linear com	nbinations of th	le columns of	Α.		

The correct answer is 'True'.

Question 6	
Correct	
Mark 1.00 out of 1.00	

Let A be 3×3 be the coefficient matrix of Ax = 0 such that $a_1 = 3a_3$ and $a_1 - a_2 + 3a_3 = 0$. Then the solutions of Ax = 0 are of the form $a(1,0,-3)^t + b(1,-1,3)^t$, where $a,b \in R$.

Select one:

True

False

The correct answer is 'True'.

Question **7** Incorrect

Mark 0.00 out of 1.00

If If A, B, AB are $n \times n$ symmetric matrices. Then AB = BA.

Select one:

True

False ×

Question 8 Not answered

Marked out of 1.00

If
$$A$$
 is a 4×3 matrix such that $Ax = 0$ has only the trivial solution, and let $b = \begin{pmatrix} 0 \\ 3 \\ 2 \\ 1 \end{pmatrix}$, then

Select one:

- \odot a. It is possible that $A \, X = b$ has infinitely many solutions
- \odot b. The system $A\,X=b$ has exactly one solution
- \odot c. The system AX=b has at most one solution.
- Od. None of the above

The correct answer is: The system $A\,X=b$ has at most one solution.

Question 9

Not answered

Marked out of 1.00

If **A**, **B** are square **n** × **n** matrices and **AB** is non-singular then **A** and **B** are non-singular.

Select one:

True

False

The correct answer is 'True'.

Question 10

Not answered Marked out of 1.00

Let
$$A$$
 be $3 imes 3$ be the coefficient matrix of $Ax=0$ such that $a_1=3\,a_3$. Then A is singular.

Select one:

True

False

Not answered Marked out of 1.00

If A, B are square $n \times n$ matrices, then $(A+B)(A-B) = A^2 - B^2$.

Select one:

True

False

The correct answer is 'False'.

Question 12	
Not answered	
Marked out of 1.00	

In the linear system Ax = b, if b is the first row of A then the system has infinitely many solutions.

Select one: True

False

The correct answer is 'False'.

Question 13 Not answered Marked out of 1.00

Let	A	be $n imes n$.	Then A	is nonsingular iff	A	t	is nonsingular.
-----	---	------------------	--------	--------------------	---	---	-----------------

Select one:

O True

False

Not answered Marked out of 1.00

Let A be 3×3 be the coefficient matrix of Ax = 0 such that $a_1 = 3a_3$. Then Ax = 0 has a infinite solutions.

Select one:

True

False

The correct answer is 'True'.

Question 15 Not answered Marked out of 1.00

If AB = AC, A is non-singular, then B = C.

Select one:

O True

False

The correct answer is 'True'.

Question 16
Not answered
Marked out of 1.00

If B is a 3 imes 3 matrix such that $B^2 = B$. One of the following is always true

Select one:

- \odot a. B is nonsingular.
- $\overset{\text{b.}}{=} B = I \cdot \\ \overset{\text{c.}}{=} B = B^{-1}$
- $^{\circ}$ d. $B^5 = B^{\cdot}$
- $D^{\circ} = D$

The correct answer is: $B^5 = B^{.}$

Question 17 Not answered

Marked out of 1.00

If z_0 is a solution of the non-homogeneous system Ax = band z_1 is a solution of the homogeneous system Ax = 0. Then $z_0 + z_1$ is a solution of Ax = b.

Select one:

O True

False

The correct answer is 'True'.

Question **18** Not answered

Marked out of 1.00

If A is symmetric and skew symmetric then A = 0. (A is skew symmetric if $A = -A^{T}$).

Select one:

True

False

The correct answer is 'True'.

Question 19 Not answered Marked out of 1.00

If A, B are square n × n matrices such that AB=0, then A and B are singular.

Select one:

True

False

Not answered

Marked out of 1.00

Let A be n imes n. Then A always has an LU factorization.

Select one:

True

False

The correct answer is 'False'.

Question 2	21	
Not answe	rered	
Marked ou	put of 1.00	

Let A be 3×3 be the coefficient matrix of the linear system (A|b) such that A has two identical rows. Then Ax = 0 has infinite solutions.

Select one:

True

False

The correct answer is 'True'.

Question 22

Not answered Not graded

What is the last two digits of your student number?

Answer:

The correct answer is: 0

Not answered

Marked out of 1.00

If **A**, **B** are $\mathbf{n} \times \mathbf{n}$ symmetric matrices then **AB** is symmetric.

Select one:

O True

False

The correct answer is 'False'.

Not answered Marked out of 1.00	Question 24	
Marked out of 1.00	Not answered	
	Marked out of 1.00	

If **A**, **B** are square **n** × **n** matrices and **A**,**B** are non-singular then **AB** is non-singular.

Select one:

O True

False

The correct answer is 'True'.

Question 25

Not answered Marked out of 1.00

The vector $(\cap \cap \cap)^T$ is a linear comb

The vector $(0,0,0)^T$ is a linear combination of the vectors $(1,2,3)^T, (1,4,1)^T, (2,3,1)^T$

Select one:

True

False

Not answered

Marked out of 1.00

Let A be n imes n. If A is nonsingular, then A^t is nonsingular.

Select one:

O True

False

The correct answer is 'True'.

Question 27

Not answered Marked out of 1.00

If A is a $4\! imes\!3$ matrix such that $A\,x=0$ has only the zero solution,

and
$$b = \begin{pmatrix} 1 \\ 3 \\ 2 \\ 0 \end{pmatrix}$$
, then the system $Ax = b$

Select one:

- a. has exactly one solution
- O b. is either inconsistent or has an infinite number of solutions
- c. is inconsistent
- O d. is either inconsistent or has exactly one solution.

The correct answer is: is either inconsistent or has exactly one solution.

Question 28	
Not answered	
Marked out of 1.00	

If the row echelon form of the matrix **A** involves a free variable, then the linear system **Ax** = **b** has infinitely many solutions.

Select one:

True

False

Not answered Marked out of 1.00

Let $A = \begin{pmatrix} 1 & 2 & 3 & 0 \\ 0 & -1 & 1 & 2 \\ 2 & 3 & 7 & 2 \end{pmatrix}$ be the coefficient matrix of the system Ax = b. If $b \in \mathbb{R}^3$ then the system has infinite harmonic values of the system of the system Ax = b.

infinitely many solutions.

Select one:

True

False

The correct answer is 'False'.

Question 30

Not answered Marked out of 1.00

If
$$A = \begin{bmatrix} 1 & 2 & 3 & 0 \\ 0 & -1 & 1 & 0 \\ 2 & 3 & 7 & 1 \end{bmatrix}$$
 is the coefficient matrix of the linear system $Ax = b$, then for any $b \in R^3$

Select one:

- a. the system is either inconsistent or it has infinite solutions.
- b. The system has infinite solutions
- c. The system is inconsistent
- Od. The system is consistent

The correct answer is: The system has infinite solutions

Question **31** Not answered Marked out of 1.00

If AB = AC, $A \neq 0$, then B = C.

Select one:

True

False

Not answered Marked out of 1.00

If
$$AB=0$$
, where A and B are $n imes n$ matrices. Then

Select one:

- \odot a. both A,B are nonsingular.
- \circ b. both A,B are singular.
- \circ c. either A = 0 or B = 0
- \odot d. either A or B is singular.

The correct answer is: either A or B is singular.

Question **33**

Not answered Marked out of 1.00

If
$$A^2 = I$$
 then

Select one:

a. A - I and A + I are nonsingular.
b. A - I and A + I both cannot be nonsingular.
c. A - I and A + I are singular.
d. none

The correct answer is: A-I and A+I both cannot be nonsingular.

Not answered Marked out of 1.00

Let A be a 4 imes 4 matrix. If the homogeneous system $A\,x=0$ has only the trivial solution then

Select one:

- \odot a. A is nonsingular.
- \odot b. A is row equivalent to I.

$$\odot$$
 c. RREF of A is J .

d. all of the above.

The correct answer is: all of the above.

Not answered	
Marked out of 1.00	

Assume that the last row in the row echelon form of a 4×4 linear system is $\begin{bmatrix} 0 & 0 & 0 & a-3 & b-4 \end{bmatrix}$. The system has exactly one solution if

Select one:

• a.
$$b \neq 4$$
.
• b. $a \neq 3$.
• c. $a \neq 3$ and $b \neq 4$.
• d. $a = 3, b = 4$.

The correct answer is: $a \neq 3$.

Not answered

Marked out of 1.00

Let A be n imes n. If A has an LU —factorization then A is nonsingular iff L is nonsingular.

Select one:

True

False

The correct answer is 'False'.

Question 37	
Not answered	
Marked out of 1.00	
A homogeneous system is always co	onsistent.
A homogeneous system is always co Select one:	onsistent.

False

The correct answer is 'True'.

Question **38** Not answered

Marked out of 1.00

Let A be $3{ imes}3$ be the coefficient matrix of the linear homogeou	s system $(A b)$ such that A has two identical rows.
^{Then} $Ax=0$ has infinite solutions.	

Select one:

True

False

Not answered Marked out of 1.00

If
$$z_0, z_1$$
 area solutions of the non-homogeneous system $Ax = b$. Then $z_0 + z_1$ is a solution of $Ax = b$

Select one:

True

False

The correct answer is 'False'.

Question 40
Not answered
Marked out of 1.00

If A, B, AB are $n \times n$ symmetric matrices. Then AB = BA.

Select one:

True

False

The correct answer is 'True'.

Question **41**

Not answered Marked out of 1.00

Let A,B be n imes n be row equivalent matrices. Then A is nonsingular iff B is nonsingular.

Select one:

O True

False

Marked out of 1.00

If the system Ax = b is inconsistent then b is not a linear combinations of the columns of A.

Select one:

O True

False

The correct answer is 'True'.

Question 43

Not answered

Marked out of 1.00

If
$$(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 3 & 0 & 4 & | & 1 \end{pmatrix}$$
 is the Augmented matrix of the system $Ax = b$ then the system does not

have infinitely many solutions.

Select one:

O True

False

The correct answer is 'True'.

Question 44 Not answered Marked out of 1.00

If A an $3\! imes\!3$ matrix such that $A\,x=0$ for a nonzero x , then

Select one:

🔵 a. none

- \odot b. A is row equivalent to the identity
- \odot c. A is nonsingular
- \odot d. A is singular.

The correct answer is: A is singular.

Not answered

Marked out of 1.00

In the linear system $A\,x=0$, if $a_1=a_2\,$ then the system has a unique solution.

Select one:

True

False

The correct answer is 'False'.

Question 46	
Not answered	
Marked out of 1.00	
A square matrix A is nonsingular iff its REF is the identity matrix.	

Select one:

O True

False

The correct answer is 'False'.

Question 47

Not answered Marked out of 1.00

Let A be $3 imes 3$ be the coefficient matrix of the linear homogeou	is system $(A 0)$ such that A has two identical rows.
Then $Ax=0$ has a unique solution.	

Select one:

True

False

Marked out of 1.00

Practice-chapter 1: Attempt review

If the row echelon form of the matrix **A** involves a free variable, then the linear system (A|b) has infinitely many solutions.

Select one:

True

False

The correct answer is 'False'.

estion 49 t answered
rked out of 1.00
Let A be nonsingular. Then
elect one:
\odot a. If A is symmetric then A^{-1} is symmetric
$^{\circ}$ b. If A is triangular then A^{-1} is triangular

- \odot c. If A is diagonal then A^{-1} is diagonal
- d. All of the above.

The correct answer is: All of the above.

Question 50
Not answered
Marked out of 1.00

If A and B are n imes n matrices such that $A \, x = B \, x$ for some non zero $x \in R^{\, n}$. Then

Select one:

- a. A-B is singular.
 b. none.
 c. A and B are singular.
- \bigcirc d. A and B are nonsingular.

The correct answer is: A-B is singular.

Not answered

Marked out of 1.00

Let A be n imes n. If A has an LU —factorization then A is nonsingular iff U is nonsingular.

Select one:

True

False

The correct answer is 'True'.

Question 52	
Not answered	
Marked out of 1.00	

If ${\it F}$ is an elementary matrix then one of the following statements is not true

Select one:

- \odot a. F is nonsingular.
- $^{\circ}$ b. $E+E^{T}$ is an elementary matrix.
- \odot c. E^{-1} is an elementary matrix.
- \odot d. E^{T} is an elementary matrix.

The correct answer is: $E+E^{T}$ is an elementary matrix.

Question 53

Not answered Marked out of 1.00



Select one:

True

False

Question 54

Not answered

Marked out of 1.00

If $\mathbf{A} = LU$ is the LU-factorization and \mathbf{U} is singular then \mathbf{A} is singular.

Select one:

O True

False

The correct answer is 'True'.

Question 55
Not answered
Marked out of 1.00

If ${}^z0,{}^z1$ are solutions of the non-homogeneous system Ax=b. Then ${}^z0+{}^z1$ is a solution of Ax=b

Select one:

True

False

The correct answer is 'False'.

Question 56

Not answered Marked out of 1.00

An n imes n matrix A is invertible if

Select one:

- \odot a. there exists a matrix B such that $AB=I\cdot$
- $^{\odot}$ b. $Ax = 0^{ha \, a \, nonzero \, solution}$
- c. both (a) and (b)
- d. none of the above

The correct answer is: there exists a matrix B such that $AB\!=\!I$.

Not answered Marked out of 1.00

Let A be $n \times n$. If A has an LU —factorization then A is row equivalent to U.

Select one:

True

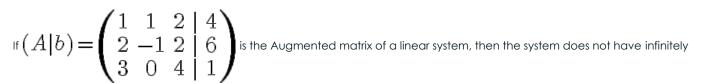
False

The correct answer is 'True'.

Question 58

Not answered

Marked out of 1.00



many solutions.

Select one:

True

False

The correct answer is 'True'.

◀ Quiz5

Jump to...

Short Exam3 ►

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 3 / General / Practice-chaptet3

```
        Started on
        Friday, 25 June 2021, 1:30 PM

        State
        Finished

        Completed on
        Friday, 25 June 2021, 1:30 PM

        Time taken
        14 secs

        Marks
        0.00/30.00

        Grade
        0.00 out of 32.00 (0%)
```

Question 1

Not answered

Marked out of 1.00

```
The vectors (0,0,0)^T, (2,3,1)^T, (2,-5,3)^T are linearly dependent.
```

Select one: True

False

Not answered

Marked out of 2.00

In a finite dimensional vector space V,

Select one:

- $^{\circ}$ a. every infinite subset of V spans V
- \bigcirc b. every infinite subset of V is linearly independent.
- $^{\circ}$ c. every infinite subset of V is linearly dependent.

 \bigcirc d. every finite subset of V span V.

The correct answer is: every infinite subset of V is linearly dependent.

The transition matrix \$U\$ from the basis [1,2+x] to [1,x-1] is

Select one:

a.
$$U = \begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix}$$

🔵 b. None

c.
$$U = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$$

$$\bigcirc \mathsf{d.} \qquad U = \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$$

The correct answer is:

$$U = \begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix}$$

Question 4

Not answered Marked out of 2.00

The rank of



is

Select one:

- 0 a. 4
-) b. 3
- c. 2
- Od. 1

The correct answer is: 2

Not answered

Marked out of 1.00

If two vectors in a vector space V are linearly

dependent, then one of them is a scalar multiple of the other.

Select one:

◯ True

False

The correct answer is 'True'.

Question 6 Not answered Marked out of 1.00

Any subset of a vector space that contains the zero vector is a subspace.

Select one:

O True

False

The correct answer is 'False'.

Question 7

Not answered Marked out of 1.00

A basis for the zero vector space $V = \{0\}$ is 0

Select one:

True

False

Question 8

Not answered

Marked out of 1.00

If n vectors span a vector space V , then a collection of m>n

vectors in V is linearly dependent.

Select one:

◯ True

False

The correct answer is 'True'.

Question 9	
Not answered	
Marked out of 1.00	

The coordinate vector of 2+2x with respect to the basis [2x,4] is $(1,2)^t$

Select one:

O True

False

The correct answer is 'False'.

Question 10

Not answered Marked out of 1.00

Any subset of a vector space that does not contain the zero vector is not a subspace.

Select one:

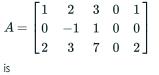
O True

False

Not answered

Marked out of 2.00

The dimension of the null space of



Select one:

🔾 a. 3

🔵 b. 2

O c. 4

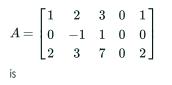
Od. 1

The correct answer is: 3

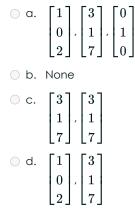
Not answered

Marked out of 2.00

A basis for the Column space of



Select one:





Question 13	
Not answered	
Marked out of 1.00	

If A is an n imes m matrix, and the columns of A span R^n then the linear system Ax=b is consistent for every $b\in R^n$.

Select one:

True

False

Not answered Marked out of 2.00

Let S be a finite subset of a subspace W of $\mathbb{R}^n.$ Then S is a basis for W if

Select one:

 \bigcirc a. S is linearly independent

 \odot b. S spans W

 $^{\circ}$ c. every vector in W is a linear combination of vectors in S

🔘 d.

None.

The correct answer is: None.

Question 15

Not answered Marked out of 2.00

Let V and W be sub-spaces of \mathbb{R}^n such that V is contained in W. Then

Select one:

0 a.

```
every basis of W contains a basis of V.
```

 \odot b. V and W may have the same dimension even though they need not be equal

🛛 c. None

 \odot d. every basis for V can be extended to a basis for W

The correct answer is: every basis for V can be extended to a basis for W

Not answered Marked out of 2.00

For any vector space V,

Select one:

 $^{igodoldsymbol{\circ}}$ a. If V is finite-dimensional, then V is a subspace of R^n for some positive integer n

 $^{igodoldsymbol{\circ}}$ b. If V is infinite-dimensional, then every infinite subset of V is linearly independent

oc. None

🔘 d.

If V is finite-dimensional, then no infinite subset of V is linearly independent.

The correct answer is:

If V is finite-dimensional, then no infinite subset of V is linearly independent.

Question 17

Not answered

Marked out of 2.00

The dimension of the subspace $S = \{(a+b+2c,a+2b+4c,b+2c)^T,a,b,c\in R\}$ is

Select one:

- 0 a. 1
- ob. 4

oc. 3

i d. 2

The correct answer is: 2

Question 18	
Not answered	
Marked out of 1.00	

The interval $S = \left[-1, 1
ight]$ is a subspace of V = R

Select one:

True

False

Not answered

Marked out of 2.00

An n imes n matrix A is invertible if

Select one:

a. all of the above.

- \bigcirc b. The rows of A are li
- \bigcirc c. The columns of A are li

 \bigcirc d. $N(A) = \{\mathbf{0}\}$

$\underline{\mathsf{D}}_{\mathsf{C}}$ The correct answer is: all of the above.

Question 20	
Not answered	
Marked out of 1.00	

The vector space of real numbers $\,R$ has infinitely many subspaces

Select one:

True

False

Question 21 Not answered Not graded

Let $V = \{f \in P_4: f(0) = f(1) = 0\}$

1. Show V is a subspace of P_4 2. Find a basis for V

Practice ch4

Jump to...

Practice ch6 ►



INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201 - 1

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201 - 1 / General / Quiz 1

1 5

Started on	Monday, 19 October 2020, 12:50 PM
State	Finished
Completed on	Monday, 19 October 2020, 1:02 PM
Time taken	12 mins 18 secs
Marks	25.00/25.00
Grade	10.00 out of 10.00 (100 %)

Question **1** Correct Mark 3.00 out of 3.00

```
If (A|b) = \begin{bmatrix} 1 & 0 & 2 & | 1 \\ -1 & 1 & -1 & 0 \end{bmatrix} is the
                     -1 \quad 0 \quad \alpha
                                         |\beta|
augmented matrix of the system
Ax = b. Answer the following
questions.
The system has no solution if
 \bigcirc \alpha = -2 and \beta \neq -1 \checkmark
 \bigcirc \alpha = -2 and \beta = -1
 \bigcirc \alpha \neq -2 and \beta \neq -1
 \bigcirc \alpha \neq -2 and \beta = -1
The system has exactly one solution if
 \bigcirc \alpha = -2 and \beta = -1
 \bigcirc \alpha \neq -2 \checkmark
 \bigcirc \alpha = -2
 \bigcirc \alpha \neq -2 and \beta \neq -1
The system has infinitely many
solutions if
 \bigcirc \alpha \neq -2 and \beta \neq -1
 \bigcirc \alpha = -2 and \beta \neq -1
 \bigcirc \alpha = -2 and \beta = -1 \checkmark
 \bigcirc \alpha \neq -2 and \beta = -1
```

Question 2 Correct Mark 2.00 out of 2.00

Let $A = \begin{bmatrix} 1 & 2 & 1 \\ -1 & 1 & 0 \\ 1 & 8 & 1 \end{bmatrix}$. If we want to find the LU factorization of A, then L =

Select one:
() a.
$$\begin{bmatrix} 1 & 0 & 0 \\ -1 & 1 & 0 \\ 1 & 2 & 1 \end{bmatrix}$$
() b.
$$\begin{bmatrix} 1 & 0 & 0 \\ -1 & 1 & 0 \\ 1 & 8 & 1 \end{bmatrix}$$
() c.
$$\begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ -1 & -2 & 1 \end{bmatrix}$$
() d.
$$\begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ -1 & -8 & 1 \end{bmatrix}$$

Question **3**

Correct Mark 2.00 out of 2.00 ♥ Flag question

If a matrix A is nonsingular, then the matrix A^T is also nonsingular.

Select one: ○ a. True ✔ ○ b. False

Question 4

Correct Mark 2.00 out of 2.00 ♥ Flag question

If Ax = b is an overdetermined and consistent linear system, then it must have infinitely many solutions.

Select one: a. True b. False ✓

Question 5

Correct Mark 2.00 out of 2.00 ♥ Flag question

If a matrix is in row echelon form, then it is also in reduced row echelon form.

Select one: a. True b. False ✓

Question 6

Correct Mark 2.00 out of 2.00 ♥ Flag question

If *A* and *B* are $n \times n$ nonsingular matrices, then *AB* is also nonsingular.

Select one: ○ a. True ✔ ○ b. False

Question 7

Correct Mark 2.00 out of 2.00 ♥ Flag question

The sum of two $n \times n$ nonsingular matrices is also nonsingular.

Select one: a. True b. False ✓

Question 8 Correct Mark 2.00 out of 2.00

If a system of linear equations is undetermined, then it must have infinitely many solutions.

Select one: a. True b. False ✓

Question 9

Correct Mark 2.00 out of 2.00 ♥ Flag question

If a matrix A is row equivalent to I, then A is nonsingular.

Select one: ○ a. True ✔ ○ b. False

Question **10** Correct Mark 2.00 out of 2.00

Let *A* be a 3 × 3 matrix and suppose that $A \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$. Then Select one: • a. Ax = 0 has infinitely many solutions • • • b. $Ax = (1, 0, 0)^T$ has infinitely many solutions • c. *A* is nonsingular • d. None of the above

Question **11** Correct Mark 2.00 out of 2.00

A homogeneous system can have a nontrivial solution.

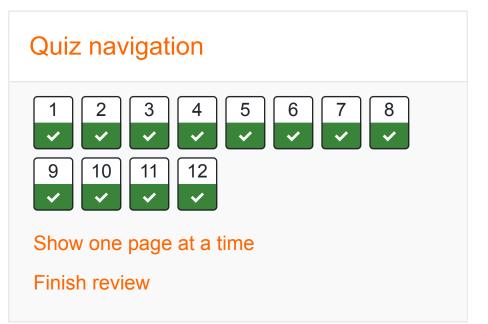
Select one: ○ a. True ✔ ○ b. False

Question **12** Correct Mark 2.00 out of 2.00

The inverse of an elementary matrix is also an elementary matrix.

Select one: ○ a. True ✔ ○ b. False

	Finish review
Math234/1	
Jump to	\$



Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 1 (chapter one)

```
Started onThursday, 1 April 2021, 9:30 AMStateFinishedCompleted onThursday, 1 April 2021, 9:45 AMTime taken14 mins 56 secsGrade6 out of 6 (100%)
```

Question 1

Correct Mark 1 out of 1

If A is an invertible n imes n matrix, $b \in \mathbb{R}^n$, then

Select one:

- \odot a. The system Ax=b is consistent
- \odot b. The system Ax=b has infinitely many solutions
- \bigcirc c. The system Ax = b is inconsistent
- \bigcirc d. The system Ax = b has only two solutions

The correct answer is: The system Ax = b is consistent

Question 2	
Correct	
Mark 1 out of 1	

If y, z are solutions to Ax = b, then y - z is a solution of the system Ax = 0.

Select one:

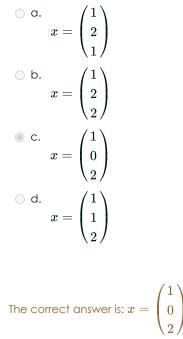
🔵 a. False

💿 b. True

Question 3	
Correct	
Mark 1 out of	1

Let A be a 4×3 -matrix with $a_2 = a_3$. If $b = a_1 + a_2 + a_3$, where a_j is the jth column of A, then a solution to the system Ax = b is

Select one:



Question 4	
Correct	
Mark 1 out of 1	

If A and B are n imes n matrices such that Ax=Bx for some non zero $x\in \mathbb{R}^n.$ Then

Select one:

- \odot a. A-B is singular.
- \bigcirc b. A and B are nonsingular.
- \odot c. A and B are singular.
- \bigcirc d. A, B are zero matrices.

The correct answer is: A-B is singular.

Correct

Mark 1 out of 1

$${\rm lf}A = \begin{pmatrix} 2 & 4 & -1 \\ 4 & -2 & 0 \\ -1 & 1 & -1 \end{pmatrix} {\rm then \ the \ lower \ triangular \ matrix \ }L {\rm \ in \ the \ }LU {\rm \ factorization \ of \ }A {\rm \ is \ given \ by \ }L {\rm \ otherwise \ }L {\rm \ oth$$

Select one:

a.
$$L = \begin{pmatrix} 2 & 0 & 0 \\ 1 & \frac{-1}{2} & 0 \\ 1 & 1 & \frac{-3}{10} \end{pmatrix}$$
b.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ \frac{-1}{2} & \frac{-3}{10} & 1 \end{pmatrix}$$
c.
$$L = \begin{pmatrix} 0 & 1 & 1 \\ 2 & 0 & 1 \\ \frac{-1}{2} & \frac{-3}{10} & 0 \end{pmatrix}$$
d.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ \frac{1}{2} & \frac{3}{10} & 1 \end{pmatrix}$$

The correct answer is:
$$L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ rac{-1}{2} & rac{-3}{10} & 1 \end{pmatrix}$$

Question 6

Correct Mark 1 out of 1

Any two n imes n-nonsingular matrices are row equivalent.

Select one:

🔘 a. False

💿 b. True

The correct answer is: True

◀ Short Exam 1

Jump to...

ZOOM Online Meetings ►

~

6/25/2021 Data retention summary

 Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 1 (chapter one).

 Started on Thursday, 1 April 2021, 9:30 AM

 State Finished

 Completed on Thursday, 1 April 2021, 9:45 AM

 Time taken 15 mins 1 sec

 Grade 4 out of 6 (67%)

Correct Mark 1 out of 1

```
If A is a 3 \times 3-matrix and the system Ax = \begin{pmatrix} 5 \\ 1 \\ 3 \end{pmatrix} has a unique solution, then the system Ax = \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}
```

Select one:

- a. has only the zero solution.
- \bigcirc b. none of the above
- c. has infinitely many solutions
- d. is inconsistent

The correct answer is: has only the zero solution.

Question 2	
Incorrect	
Mark 0 out of 1	

If A and B are n imes n matrices such that Ax=Bx for some non zero $x\in \mathbb{R}^n$. Then

Select one:

- \odot a. A and B are nonsingular.
- \bigcirc b. A, B are zero matrices.
- \bigcirc c. A and B are singular.
- \bigcirc d. A-B is singular.

The correct answer is: A - B is singular.

×

Correct Mark 1 out of 1

If y, z are solutions to Ax=b, then $rac{1}{4}y+rac{3}{4}z$ is a solution of the system Ax=b.

Select one:

- 🔘 a. False
- 💿 b. True

The correct answer is: True

Question 4

Correct Mark 1 out of 1

Let
$$A=egin{pmatrix} 1&2&3&0\\ 0&-1&1&0\\ 2&4&0&1 \end{pmatrix}$$
 and $b=egin{pmatrix} 2\\ 1\\ 4 \end{pmatrix}$. The system $Ax=b$

Select one:

- a. is inconsistent
- b. has a unique solution
- c. has exactly three solutions.
- In the second second

The correct answer is: has infinitely many solutions

Question 5 Correct Mark 1 out of 1

If
$$A$$
 is a $4 imes 4$ -matrix, $b=egin{pmatrix}1\\2\\3\\4\end{pmatrix}$, and the system $Ax=b$ has a unique solution, then A is nonsingular

Select one:

🔵 a. False

💿 b. True

Incorrect

Mark 0 out of 1

If
$$A = \begin{pmatrix} 1 & -2 & 5 \\ 4 & -5 & 8 \\ -3 & 3 & -3 \end{pmatrix}$$
 and $b = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$, then the system $Ax = b$ is inconsistent if and only if

Select one:

a. b₂ - b₁ - b₃ ≠ 0
b. b₁ - b₂ - b₃ ≠ 0
c. b₃ - b₁ - b₂ ≠ 0
d. b₃ + b₁ + b₂ ≠ 0

×

The correct answer is: $b_1 - b_2 - b_3 \neq 0$

◀ Short Exam 1

Jump to...

ZOOM Online Meetings ►

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 3 / Quizez / Quiz1

```
        Started on
        Tuesday, 9 March 2021, 1:41 PM

        State
        Finished

        Completed on
        Tuesday, 9 March 2021, 1:48 PM

        Time taken
        7 mins 21 secs

        Marks
        4.00/5.00

        Grade
        8.00 out of 10.00 (80%)
```

Question 1

Incorrect

Mark 0.00 out of 1.00

Let A be 3×3 be the coefficient matrix of the linear homogeous system (A|b) such that A has two identical rows. Then Ax = 0 has infinite solutions.

Select one:

True

False ×

The correct answer is 'True'.

Question 2	
Correct	
Mark 1.00 out of 1.00	

Let A be 3×3 be the coefficient matrix of the linear homogeous system (A|0) such that A has two identical rows. Then Ax = 0 has a unique solution.

Select one:

True

False

The correct answer is 'False'.

Question 3
Correct
Mark 1.00 out of 1.00

If the row echelon form of the matrix **A** involves a free variable, then the linear system (A|b) has infinitely many solutions.

Select one:

O True

🔍 False 🗸

The correct answer is 'False'.

Question 4	
Correct	
Mark 1.00 out of 1.00	

If
$$(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 3 & 0 & 4 & | & 1 \end{pmatrix}$$
 is the Augmented matrix of a linear system, then the system does not have infinitely many

solutions.

Select one:

🔍 True 🗸

False

The correct answer is 'True'.

Question 5	
Correct	
Mark 1.00 out of 1.00	

A homogeneous system is always consistent.

Select one:

🔍 True 🗸

False

The correct answer is 'True'.

Recording 7

Jump to...

Quiz2 🕨

6/25/2021 Data retention summary



INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201 - 1

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201 - 1 / General / Quiz 2

Started on	Wednesday, 23 December 2020, 12:48 PM
State	Finished
Completed on	Wednesday, 23 December 2020, 12:58 PM
Time taken	10 mins 45 secs
Marks	18.00/18.00
Grade	10.00 out of 10.00 (100 %)

Question 1

Correct Mark 2.00 out of 2.00

abla Flag question

Suppose that a vector space V contains n linearly independent vectors, then

Select one:

 \checkmark

- \bigcirc a. If a set *S* spans *V* then *S* must contain at most *n* vectors
- \bigcirc b. Any *n* vectors in *V* are linearly independent
- \bigcirc c. Any set containing more than *n* vectors is linearly dependent
- \bigcirc d. If a set *S* spans *V* then *S* must contain at least *n* vectors

The correct answer is: If a set S spans V then S must contain at least n vectors

Question **2**

Correct Mark 2.00 out of 2.00 ♥ Flag question

One of the following is not a basis for P_3 :

Select one:

○ a.
$$\{x, x^2 + 3, x^2 - 5\}$$

○ b. $\{1, 2x, x^2 - x\}$
○ c. $\{x^2 + 1, x^2 - 1, 2\}$
✓ d. $\{x - 1, x^2 + 1, x^2 - 1\}$

The correct answer is: $\{x^2 + 1, x^2 - 1, 2\}$

}

Question **3** Correct Mark 2.00 out of 2.00 ♥ Flag question

 If V is a vector space with dim(V) = n, then Select one: a. Any set containing less than n vectors must be linearly independent. b. Any spanning set for V must contain at most n vectors. c. Any n linearly independent vectors in V span V.
The correct answer is: Any n linearly independent vectors in V span V .
Question 4 Correct Mark 2.00 out of 2.00 ♥ Flag question
dim(span{ $1 - x, x^2, 3 + x^2, 1 + x^2$ }) equals
Select one: ○ a. 2 ○ b. 0 ○ c. 1 ○ d. 3 ✓
The correct answer is: 3
Question 5CorrectMark 2.00 out of 2.00♥ Flag question
The set of vectors $\{(1, a)^T, (b, 1)^T\}$ is a spanning set for \mathbb{R}^2 if Select one: \bigcirc a. $a \neq b$ \bigcirc b. $a \neq 1$ and $b \neq 1$ \bigcirc c. $ab \neq 1$ \checkmark
\bigcirc d. $ab = 1$

The correct answer is: $ab \neq 1$

Question 6 Correct Mark 2.00 out of 2.00

The vectors e^x , xe^x , x are linearly independent in C[0, 1].

Select one:

O a. False

🕓 b. True 🗸

Question 7
Complete
Not graded
If x_1 and x_2 are linearly independent in \mathbb{R}^3 , then $\exists x \in \mathbb{R}^3$ such that span $\{x_1, x_2, x\} = \mathbb{R}^3$.
Select one:
◯ a. True
🔘 b. False

The correct answer is: True

Question 8 Correct Mark 2.00 out of 2.00

Let $f, g, h \in C^2[a, b]$, if W[f, g, h](x) = 0 for all $x \in [a, b]$, then f, g, h are linearly dependent in C[a, b]

Select one:

🕓 b. False 🗸

The correct answer is: False

Question 9

Correct Mark 2.00 out of 2.00 ♥ Flag question

If *V* is a vector space with $\dim(V) = n$, then any n + 1 vectors in *V* are linearly dependent.

Select one:

- O a. False
- 🔘 b. True 🗸

The correct answer is: True

Question **10** Correct Mark 2.00 out of 2.00

If $\{v_1, v_2, \cdots, v_n\}$	are linearly independent in a vector space V , then V	is finite-
dimensional.		

Select one: ○ a. True ○ b. False ✓

The correct answer is: False
Question 11
Complete
Not graded
Let <i>V</i> is a vector space with dim(<i>V</i>) = 4, if $v_1, v_2, v_3, v_4 \in V$, then span $\{v_1, v_2, v_3, v_4\} = V$.
Select one:
 a. False
O b. True
The correct answer is: False
Finish review
Jump to
Section 2.2 and part of 2.3
Quiz navigation



Show one page at a time

Finish review





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INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201 - 1

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1201 - 1 / General / Quiz 3

Started on	Wednesday, 20 January 2021, 12:50 PM
State	Finished
Completed on	Wednesday, 20 January 2021, 1:00 PM
Time taken	10 mins 24 secs
Marks	22.00/22.00
Grade	10.00 out of 10.00 (100 %)

Question 1

Correct Mark 2.00 out of 2.00

If A is a 3 \times 3 matrix and $\lambda_1 = 1$ and $\lambda_2 = 1 + i$ are eigenvalues of A, then the third eigenvalue of A is

Select one:

○ a. −1 ○ b. 1 − i O c. 0 \bigcirc d. -1 + i

The correct answer is: 1 - i

Question **2** Correct Mark 2.00 out of 2.00

If the characteristic polynomial of a 3 \times 3 matrix is $(2 - \lambda)^3$, then the trace of A is 6.

Select one: O a. False 🔘 b. True 🗸

The correct answer is: True

Question 3							
Correct							
Mark 2.00 out	t of 2.00						
🌾 Flag quest	ion						
	Γο	0	0]				

	0	0	0	
The matrix	1	1	0	is diagonalizable
	7	_1	_1	



Select one:

🔘 a. True 🗸

• b. False

The correct answer is: True

Question **4**

Correct Mark 2.00 out of 2.00

One of the following is not a linear transformation.

Select one: \bigcirc a. $L : \mathbb{R}^2 \longrightarrow \mathbb{R}^3; L((x, y)^T) = (x, y, 0)^T.$ \bigcirc b. $L: P_2 \longrightarrow \mathbb{R}; L(p(x)) = 0.$ \bigcirc c. $L: P_2 \longrightarrow \mathbb{R}^2; L(ax + b) = (0, a + b)^T.$ \bigcirc d. $L: P_2 \longrightarrow P_3; L(p(x)) = xp(x) + 1.$ \checkmark

The correct answer is: $L: P_2 \longrightarrow P_3; L(p(x)) = xp(x) + 1.$

Question 5 Correct Mark 2.00 out of 2.00

If $L: V \to W$ is a linear transformation, then L(2v) = 2L(v) for every vector $v \in V$.

Select one:

- 🔘 a. False
- 🔘 b. True 🗸

The correct answer is: True

Question 6

Correct Mark 2.00 out of 2.00 ♥ Flag question

```
let L: \mathbb{R}^4 \to \mathbb{R}^2 be given by L((x_1, x_2, x_3, x_4)^T = (x_1 + x_2 + x_3, x_3 + x_4)^T, then dim(range
(L)) equals
Select one:
O a. 3
🔘 b. 2
    \checkmark
O c. 4
\bigcirc d. 1
The correct answer is: 2
```

Question 7
Correct
Mark 2.00 out of 2.00
♥ Flag question
If a 3×3 matrix A is diagonalizable, then A has 3 distinct eigenvalues.
Select one:
○ a. False ✓
O b. True
The correct answer is: False
Question 8
Correct
Mark 2.00 out of 2.00
let $L: \mathbb{R}^4 \to \mathbb{R}^2$ be given by $L((x_1, x_2, x_3, x_4)^T = (x_1 + x_2 + x_3, x_3 + x_4)^T$, then dim(ker
(L)) equals $L(x_1, x_2, x_3, x_4) = (x_1 + x_2 + x_3, x_3 + x_4)$, then diff(ker
Select one:
○ a. 2
O b. 4
O c. 3
○ d. 1
The correct ensurer is: 2
The correct answer is: 2
Question 9
Correct
Mark 2.00 out of 2.00

If A is an $n \times n$ diagonalizable matrix, then

Select one:

 \checkmark

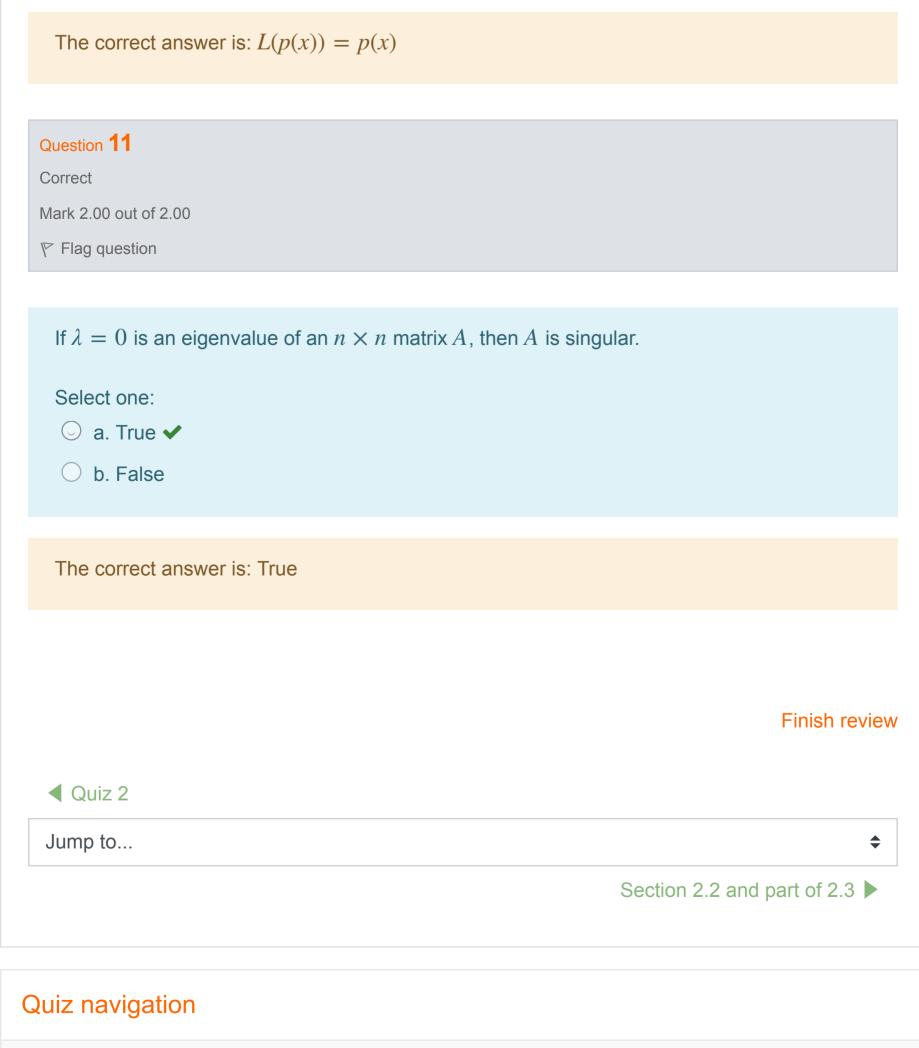
- \bigcirc a. A has *n* distinct eigenvalues
- \bigcirc b. A is singular
- \bigcirc c. A has *n* linearly independent eigenvectors

The correct answer is: A has n linearly independent eigenvectors

Question 10 Correct Mark 2.00 out of 2.00

One of the following is a linear operator on P_3

Select one: ○ a. L(p(x)) = p(x) - x \bigcirc b. L(p(x)) = p(x) \bigcirc c. L(p(x)) = p(x) + 1 \bigcirc d. L(p(x)) = p'(x) + x





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Data retention summary Switch to the standard theme Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 3

```
Started onSaturday, 29 May 2021, 5:00 PMStateFinishedCompleted onSaturday, 29 May 2021, 5:14 PMTime taken14 mins 54 secsGrade3 out of 6 (50%)
```

Question 1

Correct Mark 1 out of 1

Every spanning set for \mathbb{R}^3 contains at least 3 vectors.

Select one:

🔵 a. False

💿 b. True

The correct answer is: True

Question 2	
Incorrect	
Mark 0 out of 1	

If $\{v_1, v_2, v_3, v_4\}$ forms a spanning set for a vector space V, v_4 can be written as a linear combination of v_1, v_2, v_3 , then

Select one:

- \bigcirc a. $\{v_1, v_2, v_3\}$ is a spanning set of V.
- \bigcirc b. $\{v_1, v_2, v_3\}$ are linearly dependent in V.
- c. $\{v_1, v_2, v_3\}$ is not a spanning set of V.
- \bigcirc d. $\{v_1, v_2, v_3\}$ are linearly independent in V.

The correct answer is: $\{v_1, v_2, v_3\}$ is a spanning set of V.

×

Incorrect Mark 0 out of 1

The vectors $\{t-1,t^2+2t+1,t^2+t-2\}$ in P_3 are

Select one:

- a. linearly independent
- b. linearly dependent

The correct answer is: linearly independent

Question 4	
Incorrect	
Mark 0 out of 1	

$\dim(\operatorname{span}(x^2,3+x^2,x^2+1))$ is

Select one:

○ a. 0○ b. 3

- c. 1
- 00.1

 \bigcirc d. 2

The correct answer is: 2

Question 5	
Correct	
Mark 1 out of 1	

The vectors $\{2, x, \sin x\}$ in $C[0, 2\pi]$ are

Select one:

- a. linearly independent
- b. linearly dependent

The correct answer is: linearly independent

×

×

-0/2021	Quiz 0. Attempt review	
Question 6		
Correct		
Mark 1 out of 1		
If $\{v_1,\cdots,v_n\}$ are linearly independ	dent and v is not in Span $\{v_1,\cdots,v_n\}$, then $\{v_1,\cdots,v_n,v\}$ are linearly independent.	
Select one:		
🖲 a. True		~
🔾 b. False		
The correct answer is: True		
◄ Quiz 4 (6-6-2021)		

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Short Exam 1 ►

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 3 / Quizez / Quiz 3

```
Started onThursday, 1 April 2021, 1:40 PMStateFinishedCompleted onThursday, 1 April 2021, 2:03 PMTime taken23 mins 31 secsGrade11.00 out of 13.00 (85%)
```

Question 1 Correct

Mark 1.00 out of 1.00

Let A be $n \times n$. If A has an LU-factorization then A is row equivalent to U.

Select one:

🔍 True 🗸

False

The correct answer is 'True'.

Question 2	
Correct	
Mark 1.00 out of 1.00	

Let A be n imes n. If A has an LU-factorization then A is nonsingular iff L is nonsingular.

Select one:

True

False

The correct answer is 'False'.

Correct

Mark 1.00 out of 1.00

Select one:

• a.

$$L = \begin{bmatrix} 1 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 \\ -2 & -3 & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 4 & 2 \\ 0 & 3 & 1 \\ 0 & 0 & 8 \end{bmatrix}$$
• b.

$$L = \begin{bmatrix} 1 & 0 & 0 \\ \frac{1}{2} & 1 & 0 \\ 2 & -3 & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 4 & 2 \\ 0 & 3 & 1 \\ 0 & 0 & 8 \end{bmatrix}$$
• c.

$$L = \begin{bmatrix} 1 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 \\ 2 & 3 & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 4 & 2 \\ 0 & 3 & 1 \\ 0 & 0 & 8 \end{bmatrix}$$

🛛 d. None

The correct answer is:
$$L = \begin{bmatrix} 1 & 0 & 0 \\ \frac{1}{2} & 1 & 0 \\ 2 & -3 & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 4 & 2 \\ 0 & 3 & 1 \\ 0 & 0 & 8 \end{bmatrix}$$

Question 4

Correct Mark 1.00 out of 1.00

If E is an elementary matrix then one of the following statements is not true

Select one:

a. E^{-1} is an elementary matrix.
b. $E + E^{T}$ is an elementary matrix.
c. E^{T} is an elementary matrix.
d. E is nonsingular.

The correct answer is: $E+E^{T}$ is an elementary matrix.



2/6

Incorrect Mark 0.00 out of 1.00

If
$$A^2 = I$$
 then

Select one:

X

The correct answer is: A-I and A+I both cannot be nonsingular.

Question 6	
Correct	
Mark 1.00 out of 1.00	

If A an $3\! imes\!3$ matrix such that $A\,x=0$ for a nonzero x , then

Select one:

- \odot a. A is nonsingular
- \odot b. A is row equivalent to the identity
- \odot c. A is singular.
- 🛛 d. none

The correct answer is: A is singular.

Question 7			
Correct			
Mark 1.00 out of 1.00)		

A square matrix **A** is nonsingular *iff* its *REF* is the identity matrix.

Select one:

O True

False

The correct answer is 'False'.

Incorrect Mark 0.00 out of 1.00

Let A be n imes n. If A has an LU —factorization then A is nonsingular iff U is nonsingular.

Select one:

True

False ×

The correct answer is 'True'.

Question 9	
Correct	
Mark 1.00 out of 1.00	

If A and B are n imes n matrices such that $A \, x = B \, x$ for some non zero $x \in R^{n}$. Then

Select one:

a. A - B is singular.
b. none.
c. A and B are nonsingular.
d. A and B are singular.

The correct answer is: A-B is singular.

Question 10

Correct Mark 1.00 out of 1.00

Let A be a 4 imes 4 matrix. If the homogeneous system $A\,x=0$ has only the trivial solution then

Select one:

- \odot a. A is nonsingular.
- \odot b. A is row equivalent to I.
- \odot c. RREF of A is I.
- In all of the above.

The correct answer is: all of the above.

 \checkmark

Mark 1.00 out of 1.00

If $\Delta = III$ is	the LU-facto	prization and	d II is sinal	Ilar then A	is singular
II A - LU IS		JIZUIION UN	u u is siriyi		is singului.

Select one:	Sel	lect	one:
-------------	-----	------	------

- 🔍 True 🗸
- False

The correct answer is 'True'.

Question 12	
Correct	
Mark 1.00 out of 1.00	

Let A be n imes n. Then A always has an LU factorization.

Select o	one:
----------	------

True

False

The correct answer is 'False'.

Question 13
Correct
Mark 1.00 out of 1.00

If **A**, **B** are square **n** × **n** matrices such that **AB=0**, then **A** and **B** are singular.

Select one:

True

False

The correct answer is 'False'.

◀ Quiz2

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quiz4 🕨

Data retention summary

	ourses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 3
Started on	Saturday, 29 May 2021, 5:00 PM
State	Finished
Completed on	Saturday, 29 May 2021, 5:14 PM
Time taken	14 mins 30 secs
Grade	6 out of 6 (100 %)

Let V be a vector space of dimension 4 and $W=\{v_1,v_2,v_3,v_4,v_5\}$ a set of nonzero vectors of V , then

Select one:

Mark 1 out of 1

- a. W is a spanning set
- b. ₩ is a basis
- \odot c. W is linearly independent

The correct answer is: W is linearly dependent

Question 2
Correct

Mark 1 out of 1

If
$$\{v_1, v_2, v_3, v_4\}$$
 is a basis for a vector space V , then the set $\{v_1, v_2, v_3\}$ is

Select one:

- \odot a. linearly independent and not a spanning set for V .
- \odot b. linearly dependent and not a spanning set for V .
- c. linearly dependent and a spanning set
- \odot d. linearly independent and a spanning set for V.

The correct answer is: linearly independent and not a spanning set for V .

Question 3 Correct Mark 1 out of 1

If $\{{v_1, v_2, v_3, v_4}\}$ forms a spanning set for a vector space V, v_4 can be written as a linear combination of v_1, v_2, v_3 , then

Select one:

a. { ^v₁, ^v₂, ^v₃ } are linearly independent in V.
b. { ^v₁, ^v₂, ^v₃ } are linearly dependent in V.
c. { ^v₁, ^v₂, ^v₃ } is a spanning set of V.
d. { ^v₁, ^v₂, ^v₃ } is not a spanning set of V.

1, 2, 3 is not a spanning set of γ .

The correct answer is: $\{{}^v{}_1, {}^v{}_2, {}^v{}_3\}$ is a spanning set of V .

Question 4	
Correct	
Mark 1 out of 1	

The vectors
$$\{x+1, x^2-2x-1, x^2-x+2\}$$
 form a basis for P_3 .

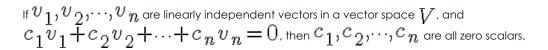
Select one:

🔵 a. False

🔍 b. True

The correct answer is: True

Question 5	
Correct	
Mark 1 out of 1	

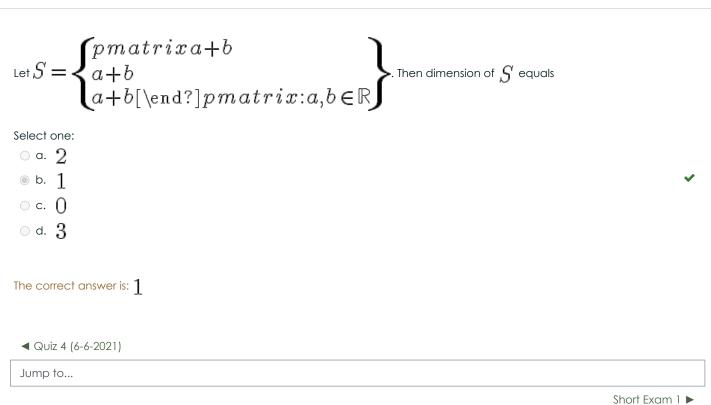


Select one:

🔵 a. False

💿 b. True

Correct Mark 1 out of 1



Data retention summary

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6/25/2021
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Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 4 (6-6-2021) Started on Sunday, 6 June 2021, 4:00 PM State Finished Completed on Sunday, 6 June 2021, 4:14 PM Time taken 14 mins 45 secs Grade 5.00 out of 6.00 (83%) Question 1 Correct Mark 1.00 out of 1.00 The coordinate vector of $\begin{pmatrix} 3\\2\\5 \end{pmatrix}$ with respect to the ordered basis $\begin{bmatrix} 1\\1\\1 \end{pmatrix}, \begin{pmatrix} 1\\2\\2 \end{pmatrix}, \begin{pmatrix} 2\\3\\4 \end{bmatrix}$ is Select one: 🔍 a. 1 $^{-4}_{3}$ $\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$ 🔵 b. $\bigcirc c. \begin{pmatrix} 3\\2\\5 \end{pmatrix}$ od. $\begin{pmatrix} -1\\ 4 \end{pmatrix}$ The correct answer is: $\begin{pmatrix} 1 \\ -4 \\ 3 \end{pmatrix}$

Question 2		
Correct		

Mark 1.00 out of 1.00

Let A be a 4 imes 5-matrix, with rank(A) = 3. Then The rows of A are linearly independent.

Se	lect	one:

- 🔘 a. False
- 🔵 b. True

The correct answer is: False

Question **3** Correct Mark 1.00 out of 1.00

If
$$A = egin{pmatrix} 1 & 2 & -1 & 0 \\ -1 & -2 & 2 & 0 \\ 2 & 4 & 0 & 0 \end{pmatrix}$$
 , then $\mathrm{rank}(A) = 3.$

Select one:

- 🔵 a. True
- b. False

The correct answer is: False

Question 4	
Incorrect	
Mark 0.00 out of 1.00	

If A is a nonzero 5 imes 2-matrix and Ax=0 has infinitely many solutions, then ${\sf rank}(A)=0$

Select one:

- 🔵 a. 5
- \odot b. 3
- c. 1
- d. 2

×

The correct answer is: 1

Question **5** Correct

Mark 1.00 out of 1.00

If A is a 4 imes 4-matrix, and Ax=0 has only the zero solution, then ${ m rank}(A)=$

Selec	t or	ie:
0 c	a. 3	
⊖ k	o. 1	
○ c	2. 4	
0 c	i. 2	

The correct answer is: 4

Question 6	
Correct	
Mark 1.00 out of 1.00	

If the columns of $A_{n imes n}$ are linearly independent and $b\in \mathbb{R}^n$, then the system Ax=b has

Select one:

- a. infinitely many solutions
- b. exactly 2 solutions
- c. no solution
- In the second second

The correct answer is: exactly one solution

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Quiz 3 🕨

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 4 (6-6-2021)

```
        Started on
        Sunday, 6 June 2021, 4:05 PM

        State
        Finished

        Completed on
        Sunday, 6 June 2021, 4:20 PM

        Time taken
        14 mins 53 secs

        Grade
        6.00 out of 6.00 (100%)
```

Question 1

Correct Mark 1.00 out of 1.00

If A is a 4 imes 4-matrix, and Ax=0 has only the zero solution, then ${
m rank}(A)=$

Select one:

◎ a. 4	
○ b. 1	
○ c. 2	
🔾 d. 3	

The correct answer is: 4

Question 2	
Correct	
Mark 1.00 out of 1.00	

The coordinate vector of 8+6x with respect to the basis [2x,4] is $(3,2)^T$

Select one:

🖲 a. True

🔘 b. False

Correct

Mark 1.00 out of 1.00

If
$$A=egin{pmatrix} 1&2&-1&0\ -1&-2&2&0\ 2&4&0&0 \end{pmatrix}$$
 , then ${
m rank}(A)=3.$

Select one:

- 🔵 a. True
- b. False

The correct answer is: False

Question 4		
Correct		
Mark 1.00 out of 1.00		
If A is a $5 imes 7$ matrix, then nullity of $A\geq 2.$		
Select one:		

🔵 a. False

💿 b. True

The correct answer is: True

Question 5	
Correct	
Mark 1.00 out of 1.00	

If A is an $n \times n$ -matrix and for each $b \in \mathbb{R}^n$ the system Ax = b has a unique solution, then

Select one:

a.
$$A$$
 is singular
b. A is nonsingular
c. nullity $(A) = 1$
d. rank $(A) = n-1$

The correct answer is: A is nonsingular

 \checkmark

Question 6	
Correct	
Nark 1.00 out of 1.00	
If A is a nonzero $5\! imes\!2$ -matrix and $Ax=0$ has infinitely many solutions, then rank(A) $=$	
A is a nonzero $J \times Z$ matrix and $A x = 0$ from the order of the order of $(A x) = 0$	
Select one:	
\odot a. 2	
○ b. 3	
• c. 1	~
○ d. 5	
The correct answer is: 1	

Jump to...

Quiz 3 🕨

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 1 (chapter one)

```
Started onThursday, 1 April 2021, 9:30 AMStateFinishedCompleted onThursday, 1 April 2021, 9:45 AMTime taken15 mins 1 secGrade5 out of 6 (83%)
```

Question 1

Correct

Mark 1 out of 1

If
$$A = \begin{pmatrix} 2 & 4 & -1 \\ 4 & -2 & 0 \\ -1 & 1 & -1 \end{pmatrix}$$
 then the lower triangular matrix L in the LU -factorization of A is given by

Select one:

a.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ \frac{1}{2} & \frac{3}{10} & 1 \end{pmatrix}$$
b.
$$L = \begin{pmatrix} 0 & 1 & 1 \\ 2 & 0 & 1 \\ \frac{-1}{2} & \frac{-3}{10} & 0 \end{pmatrix}$$
c.
$$L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ \frac{-1}{2} & \frac{-3}{10} & 1 \end{pmatrix}$$
d.
$$L = \begin{pmatrix} 2 & 0 & 0 \\ 1 & \frac{-1}{2} & 0 \\ 1 & 1 & \frac{-3}{10} \end{pmatrix}$$

The correct answer is: $L = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ \frac{-1}{2} & \frac{-3}{10} & 1 \end{pmatrix}$

Question 2
Correct
Mark 1 out of 1

If A is a singular 3 imes 3-matrix, then the reduced row echelon form of A has 2 rows of zeros.

Select one:	
a. False	✓
🔘 b. True	

The correct answer is: False

Question 3	
Correct	
Mark 1 out of 1	

Assume that the last row in the reduced row echelon form of a 4×4 linear system is $\begin{bmatrix} 0 & 0 & a - 3|b - 4 \end{bmatrix}$. The system is inconsistent if

Select one: (a) a = 3 and $b \neq 4$. (b) a = 3, b = 4. (c) $a \neq 3$. (d) $b \neq 4$.

The correct answer is: a=3 and b
eq 4.

Question 4	
Correct	
Mark 1 out of 1	

If
$$A$$
 is a 4×4 -matrix, $b = \begin{pmatrix} 1 \\ 2 \\ 3 \\ 4 \end{pmatrix}$, and the system $Ax = b$ has a unique solution, then A is nonsingular

Select one:

🔵 a. False

💿 b. True

If A is an invertible n imes n matrix, $b\in \mathbb{R}^n$, then

Select one:

- \odot a. The system Ax = b has infinitely many solutions
- \odot b. The system Ax=b is consistent
- \odot c. The system Ax=b has only two solutions
- \bigcirc d. The system Ax=b is inconsistent

The correct answer is: The system Ax = b is consistent

Question 6
Incorrect
Mark 0 out of 1
In the linear system $Ax=0$, if $a_1=a_2+3a_4$ then $x=egin{pmatrix} -1 \ 1 \ 3 \end{pmatrix}$ is a solution to $Ax=0.$
Select one:
a. True
🔿 b. False
The correct answer is: False

◀ Short Exam 1

Jump to...

ZOOM Online Meetings ►

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 3 / Quizez / Quiz2

```
        Started on
        Tuesday, 23 March 2021, 1:35 PM

        State
        Finished

        Completed on
        Tuesday, 23 March 2021, 1:54 PM

        Time taken
        18 mins 56 secs

        Grade
        13.00 out of 13.00 (100%)
```

Question 1

Correct Mark 1.00 out of 1.00

In the linear system Ax=0 , if $a_1=a_2$ then the system has a unique solution.

Select one:

O True

False

The correct answer is 'False'.

Question 2	
Correct	
Mark 1.00 out of 1.00	

If z_0 is a solution of the non-homogeneous system Ax = band z_1 is a solution of the homogeneous system Ax = 0. Then $z_0 + z_1$ is a solution of Ax = b.

Select one:

🔍 True 🗸

False

Question 3
Correct
Mark 1.00 out of 1.00

Let A be 3×3 be the coefficient matrix of Ax = b such that $a_1 = 3a_3$ and $a_1 - a_2 + 3a_3 = b$. Then Ax = b has infinite solutions.

Select one:

🔍 True 🗸

False

The correct answer is 'True'.

Question 4	
Mark 1.00 out of 1.00	
If z_0, z_1 area solutions of the non-homogeneous system $Ax=b$. Then z_0+z_1 is a solution of $Ax=b$	
Select one:	

True

False

The correct answer is 'False'.

Question 5 Correct Mark 1.00 out of 1.00

Let A be 3×3 be the coefficient matrix of Ax = 0 such that $a_1 = 3a_3$ and $a_1 - a_2 + 3a_3 = 0$. Then the solutions of Ax = 0 are of the form $a(1, 0, -3)^t + b(1, -1, 3)^t$, where $a, b \in R$.

Select one:

True

False

Correct Mark 1.00 out of 1.00

If A,B are square n imes n matrices, then $(A+B)(A-B)=A^2-B^2$.

Select one:

True

🖲 False 🗸

The correct answer is 'False'.

Question 7	
Correct	
Mark 1.00 out of 1.00	

In the linear system Ax=b, if $b=a_1-a_2+3a_4=a_1$ then the system has infinite solutions.

Select one:

🔍 True 🗸

False

The correct answer is 'True'.

Question 8 Correct Mark 1.00 out of 1.00

If **A**, **B** are square **n** × **n** matrices and **AB** is non-singular then **A** and **B** are non-singular.

Select one:

🔍 True 🗸

False

Question **9** Correct Mark 1.00 out of 1.00

The vector $(0,0,0)^T$ is a linear combination of the vectors $(1,2,3)^T, (1,4,1)^T, (2,3,1)^T$

Select one:

🔍 True 🗸

False

The correct answer is 'True'.

Question 10	
Correct	
Mark 1.00 out of 1.00	

If AB = AC, A is non-singular, then B = C.

Select one:

🔍 True 🗸

False

The correct answer is 'True'.

Question 11 Correct Mark 1.00 out of 1.00

Let A be n imes n. Then A is nonsingular iff A^t is nonsingular.

Select one:

🔍 True 🗸

False

Question 12	
Correct	
Mark 1.00 out of 1.00	
If the system Ax = b is inconsiste	ent then b is not a linear combinations of the columns of A .

Select one:
🔍 True 🗸

False

The correct answer is 'True'.

Question 13	
Correct	
Mark 1.00 out of 1.00	

Let A be n imes n. If A is nonsingular, then A^t is nonsingular.

Select one:

🔍 True 🗸

False

The correct answer is 'True'.

◀ Quiz1

Jump to...

Quiz 3 🕨

6/25/2021 Data retention summary Quiz2: Attempt review

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 3

```
Started onSaturday, 29 May 2021, 5:00 PMStateFinishedCompleted onSaturday, 29 May 2021, 5:15 PMTime taken14 mins 51 secsGrade5 out of 6 (83%)
```

Question 1 Correct Mark 1 out of 1

Let V be a vector space, $v_1, v_2, v_3 \in V$ such that v_1, v_2 are linearly independent, v_2, v_3 are linearly independent, then v_1, v_2, v_3 are linearly independent.

Select one:

- 🔘 a. False
- 🔵 b. True

The correct answer is: False

Question 2 Correct

Mark 1 out of 1

Let
$$S=\{egin{pmatrix}a+b\a+b\a+b\end{pmatrix}:a,b\in\mathbb{R}\}$$
 . Then dimension of S equals

Select one:

- a. 2
 b. 1
 c. 0
- 🔵 d. 3

The correct answer is: 1

Question 3
Correct

Mark 1 out of 1

If V is a vector space and $\{v_1,v_2,\cdots,v_n\}$ is a spanning set for V and $v_{n+1}\in V$, then the set $\{v_1,v_2,\cdots,v_{n+1}\}$ is

Select one:

- 🔘 a. not a spanning set.
- b. a spanning set.

The correct answer is: a spanning set.

Question 4 Correct Mark 1 out of 1	
Every linearly independent set of vectors in \mathbb{R}^4 has exactly 4 vectors.	
Select one: oralle a. True	
b. False	~
The correct answer is: False	
Question 5 Incorrect	
Mark 0 out of 1	

Which of the following is not a basis for the corresponding space

Select one:

• a.
$$\{(1,-1)^T, (2,-3)^T\}; \mathbb{R}^2$$

• b. $\{(1,-1,-1)^T, (2,-3,0)^T, (-1,0,2)^T\}; \mathbb{R}^3$
• c. $\{x, 1-x, 2x+3\}; P_3$
• d. $\{5-x, x\}; P_2$

The correct answer is: $\{x, 1-x, 2x+3\}$; P_3

×

Question 6	
Correct	
Mark 1 out of	1

If $\{v_1, v_2, v_3, v_4\}$ forms a spanning set for a vector space V, dim(V) = 3, v_4 can be written as a linear combination of v_1, v_2, v_3 , then

Select one:

- igodot a. $\{v_1,v_2,v_3\}$ do not form a spanning set for V
- ${iglerigan}$ b. $\{v_1,v_2,v_3\}$ is a basis for V
- \odot c. v_1 can be written as a linear combination of v_2, v_3, v_4
- \bigcirc d. $\{v_1, v_2, v_3\}$ are linearly dependent

The correct answer is: $\{v_1, v_2, v_3\}$ is a basis for V

Jump to...

ZOOM Online Meetings ►

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 4 (6-6-2021)

```
        Started on
State
        Sunday, 6 June 2021, 4:04 PM

        State
        Finished

        Completed on
Time taken
        Sunday, 6 June 2021, 4:19 PM

        Grade
        3.00 out of 6.00 (50%)
```

Question **1** Incorrect Mark 0.00 out of 1.00

Let
$$E=[2+x,1-x,x^2+1]$$
 be an ordered basis for P_3 . If $[p(x)]_E=egin{pmatrix}1\\-2\\3\end{pmatrix}$, then

Select one:

a. $p(x) = 3x^2 + x - 2$ b. $p(x) = 3x^2 - 2x + 1$ c. $p(x) = 3x^2 + 3x + 3$ d. $p(x) = x^2 - x + 5$

The correct answer is: $p(x) = 3x^2 + 3x + 3$

Question 2

Mark 0.00 out of 1.00

If A is an $m \times n$ -matrix, then rank $(A) = \operatorname{rank}(A^T)$.

Select one:

- 🔘 a. True
- b. False

The correct answer is: True

×

If A is an m imes n matrix, then

Select one:

a. rank(A) $\leq \min\{m, n\}$ b. rank(A) $\leq n$ c. rank(A) = m = nd. rank(A) $\leq m$

The correct answer is: $\mathrm{rank}(A) \leq \min\{m,n\}$

Question 4	
Correct	
Mark 1.00 out of 1.00	

If A is an n imes n-matrix and for each $b\in \mathbb{R}^n$ the system Ax=b has a unique solution, then

Select one:

- \bigcirc a. A is singular
- \odot b. rank(A) = n-1
- \odot c. nullity(A) = 1
- \odot d. A is nonsingular

The correct answer is: A is nonsingular

Question 5	
Incorrect	
Mark 0.00 out of 1.00	

×

If A is a nonzero 5 imes 2-matrix and Ax=0 has infinitely many solutions, then ${
m rank}(A)=$

Select one:

0 a. 1

) b. 3

● c. 2

i d. 5

Oursetien	~
Question	0

Correct Mark 1.00 out of 1.00

The rank of $A=egin{pmatrix}1\\2\\3\end{pmatrix}$	4 6 8	$1 \\ -1 \\ -3$	2 2 2	$egin{array}{c} 1 \ -1 \ -3 \end{array}$ is
Select one:				
💿 a. 2				
\odot b. 3				
○ c. 1				

od. 0

The correct answer is: 2

Jump to...

Quiz 3 🕨

1

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 3 / Quizez / Quiz5

```
        Started on
        Thursday, 22 April 2021, 1:25 PM

        State
        Finished

        Completed on
        Thursday, 22 April 2021, 1:25 PM

        Time taken
        8 secs

        Marks
        1.00/1.00

        Grade
        10.00 out of 10.00 (100%)
```

Question 1

Correct

Mark 1.00 out of 1.00

The rank of a matrix A is the dimension of the row pace of A. ANSWER IS TRUE

Select one:

- 🔍 True 🗸
- False

The correct answer is 'True'.

◄ Quiz6-short exam2

Jump to...

Practice-chapter 1

Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 3 / Quizez / Quize-short exam2 Started on Tuesday, 4 May 2021, 12:10 PM **State** Finished Completed on Tuesday, 4 May 2021, 12:31 PM Time taken 21 mins 32 secs **Overdue** 6 mins 32 secs Question 1 Incorrect Marked out of 1.00 If two vectors in a vector space V are linearly dependent, then each one of them is a scalar multiple of the other. Select one: True X False The correct answer is 'False'. Question 2 Correct Marked out of 1.00 The vectors $(0,0,0)^T, (2,3,1)^T, (2,-5,3)^T$ are linearly dependent. Select one: 🔍 True 🗸 False The correct answer is 'True'.

Question 3	
Correct	

Marked out of 1.00

An n imes n matrix A is invertible if

Select one:

$$\circ$$
 a. $N(A) = \{\mathbf{0}\}$

 $^{igodoldsymbol{ iny b.}}$ The columns of A are li

 \bigcirc c. The rows of A are li

d. all of the above.

Your answer is correct.

The correct answer is: all of the above.

Question 4	
Correct	
Marked out of 1.00	

Any subset of a vector space that contains the zero vector is a subspace.

Select one:

True

False

The correct answer is 'False'.

6/25/2021

Question 5 Correct	
Marked out of 1.00	
If A is an $n imes n$ invertible matrix, then the linear system $Ax=b$ is consistent for every $b\in R^n$.	

Select one:	
🔍 True 🗸	

False

The correct answer is 'True'.

Question 6	
Correct	
Marked out of 1.00	

If V is a vector space with dimension n>0 , then any set of m vectors in V does not span V.

Select one:

- 🔍 True 🗸
- False

The correct answer is 'True'.

Question /	
Correct	

Marked out of 1.00

Let u and v be distinct (not equal)vectors in a vector space V, and let B be a basis for V. Then

Select one:

- \bigcirc a. the coordinate vector of *u* with respect to *B* equals *u*
- b. None
- \circ c. the coordinate vector of u + v with respect to B never equals the sum of the coordinate vector of v and the coordinate vector of v with respect to B.
- $^{\odot}$ d. the coordinate vector of u+v with respect to B equals the sum of the coordinate vector of u and the coordinate vector of v with respect to B.

Your answer is correct.

The correct answer is:

the coordinate vector of u + v with respect to B equals the sum of the coordinate vector of u and the coordinate vector of v with respect to B.

Question 8 Correct Marked out of 1.00

Let S be a finite subset of a subspace W of R^{n} . Then S is a basis for W if

Select one:

 $^{\circ}$ a. every vector in W is a linear combination of vectors in S

 $^{\circ}$ b. S spans W

● c.

None.

 $^{\odot}$ d. S is linearly independent

Your answer is correct.

The correct answer is: None. 1

Correct Marked out of 1.00

A basis for the Column space of

$$A = \begin{bmatrix} 1 & 2 & 3 & 0 & 1 \\ 0 & -1 & 1 & 0 & 0 \\ 2 & 3 & 7 & 0 & 2 \end{bmatrix}$$

is

Select one:

$$\overset{\alpha.}{\begin{bmatrix} 1\\ 0\\ 2[?][?] \end{bmatrix}} \begin{bmatrix} ?][?]3\\ 1\\ ?][?]7[?]?] \end{bmatrix} \begin{bmatrix} ?]?]0\\ 1\\ ?][?]0 \end{bmatrix}$$

$$\overset{b.}{\begin{bmatrix} 1\\ 0\\ 2[?][?] \end{bmatrix}} \begin{bmatrix} ?][?]3\\ [?][?]7[?][?] \end{bmatrix} \begin{bmatrix} ?][?]3\\ [?][?]7[?][?] \end{bmatrix}$$

$$\overset{c.}{\begin{bmatrix} ?][?]3\\ 1\\ ?][?]7[?][?] \end{bmatrix}} \begin{bmatrix} ?][?]3\\ [?][?]7[?][?] \end{bmatrix}$$

$$\overset{d.}{} \text{ None}$$

Your answer is correct.

The correct answer is:
$$\begin{bmatrix} 1\\0\\2[?][?] \end{bmatrix} \begin{bmatrix} [?][?]3\\1\\[?][?]7[?][?] \end{bmatrix}$$

https://itc.birzeit.edu/mod/quiz/review.php?attempt=546883&cmid=235829

 \checkmark

6/25/2021

Question 10 Correct Marked out of 1.00

One of the following set of vectors are linearly independent

Select one:

$$^{\circ a.}$$
 (1,1,2,1,4),(2,-1,2,-1,6),(0,0,0,0,0)

• b.
$$x, 1, x^2 + 1$$

~

\circ c. (1,2,3),(0,1,0),(0,0,1),(1,1,1) \circ d. (1,1,2,1,4),(2,2,4,2,8)

Your answer is correct.

The correct answer is: $x, 1, x^2 + 1$

<u>D(</u>

Correct

Marked out of 1.00

A basis for the Row space of

$$A = \begin{bmatrix} 1 & 2 & 3 & 0 & 1 \\ 0 & -1 & 1 & 0 & 0 \\ 2 & 3 & 7 & 0 & 2 \end{bmatrix}_{\text{is}}$$

Select one:

Your answer is correct. The correct answer is: $\begin{bmatrix} 1 & 2 & 3 & 0 & 1 \end{bmatrix}$ $\begin{bmatrix} ? \\ ? \end{bmatrix}$ $\begin{bmatrix} ? \\ 0 & -1 & 1 & 0 & 0 \end{bmatrix}$

◄ quiz4

Jump to...

Quiz5 🕨

1

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Quiz 3

```
Started onSaturday, 29 May 2021, 5:00 PMStateFinishedCompleted onSaturday, 29 May 2021, 5:15 PMTime taken14 mins 51 secsGrade5 out of 6 (83%)
```

Question 1

Correct Mark 1 out of 1

Let V be a vector space, $v_1, v_2, v_3 \in V$ such that v_1, v_2 are linearly independent, v_2, v_3 are linearly independent, then v_1, v_2, v_3 are linearly independent.

 \checkmark

Select one:

- 🔘 a. False
- 🔵 b. True

The correct answer is: False

Question 2

Correct Mark 1 out of 1

Let
$$S=\{egin{pmatrix}a+b\a+b\a+b\end{pmatrix}:a,b\in\mathbb{R}\}.$$
 Then dimension of S equals

Select one:

- a. 2
 b. 1
 c. 0
- \odot d. 3

The correct answer is: 1

Question 3	
Correct	
Mark 1 out of	1

If V is a vector space and $\{v_1,v_2,\cdots,v_n\}$ is a spanning set for V and $v_{n+1}\in V$, then the set $\{v_1,v_2,\cdots,v_{n+1}\}$ is

Select one:

- a. not a spanning set.
- b. a spanning set.

The correct answer is: a spanning set.

Question 4	
Correct	
Mark 1 out of 1	
Every linearly independent set of vectors in \mathbb{R}^4 has exactly 4 vectors.	
Select one:	
🔿 a. True	
b. False	~
The correct answer is: False	
Question 5	
Incorrect	
Mark 0 out of 1	

Which of the following is not a basis for the corresponding space

Select one:

a. {(1,-1)^T, (2,-3)^T}; R²
b. {(1,-1,-1)^T, (2,-3,0)^T, (-1,0,2)^T}; R³
c. {x,1-x,2x+3}; P₃
d. {5-x,x}; P₂

The correct answer is: $\{x, 1-x, 2x+3\}$; P_3

X

If $\{v_1, v_2, v_3, v_4\}$ forms a spanning set for a vector space V, dim(V) = 3, v_4 can be written as a linear combination of v_1, v_2, v_3 , then

Select one:

- \odot a. $\{v_1,v_2,v_3\}$ do not form a spanning set for V
- \odot b. $\{v_1,v_2,v_3\}$ is a basis for V
- \odot c. v_1 can be written as a linear combination of v_2, v_3, v_4
- \bigcirc d. $\{v_1, v_2, v_3\}$ are linearly dependent

The correct answer is: $\{v_1, v_2, v_3\}$ is a basis for V

◄ Quiz 4 (6-6-2021)

Jump to...

Short Exam 1 ►

Data retention summary

Started on	Sunday, 10 January 2021, 9:45 AM
State	Finished
Completed on	Sunday, 10 January 2021, 10:46 AM
Time taken	1 hour 1 min
Grade	32.00 out of 32.00 (100%)

Question 1 Correct

Mark 1.00 out of 1.00

The transition matrix from the standard basis
$$S = \begin{bmatrix} e_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}, e_2 = \begin{pmatrix} 0 \\ 1 \end{bmatrix} \end{bmatrix}$$
 to the ordered basis $U = \begin{bmatrix} u_1 = \begin{pmatrix} 7 \\ 2 \end{pmatrix}, u_2 = \begin{pmatrix} 3 \\ 1 \end{bmatrix} \end{bmatrix}$ is

Select one:

 $\bigcirc a. T = \begin{pmatrix} 7 & 3 \\ 2 & 1 \end{pmatrix}$ $\bigcirc b. T = \begin{pmatrix} 7 & -3 \\ -2 & 1 \end{pmatrix}$ $\bigcirc c. T = \begin{pmatrix} -7 & 3 \\ 2 & -1 \end{pmatrix}$ $\bigcirc d. T = \begin{pmatrix} 1 & -3 \\ -2 & 7 \end{pmatrix}$

The correct answer is:
$$T = \begin{pmatrix} 1 & -3 \\ -2 & 7 \end{pmatrix}$$

Question 2

Correct Mark 1.00 out of 1.00

Let $S = \{ f \in C[-1, 1] : f(-1) = f(1) \}$, then S is a subspace of C[-1, 1].

Select one:

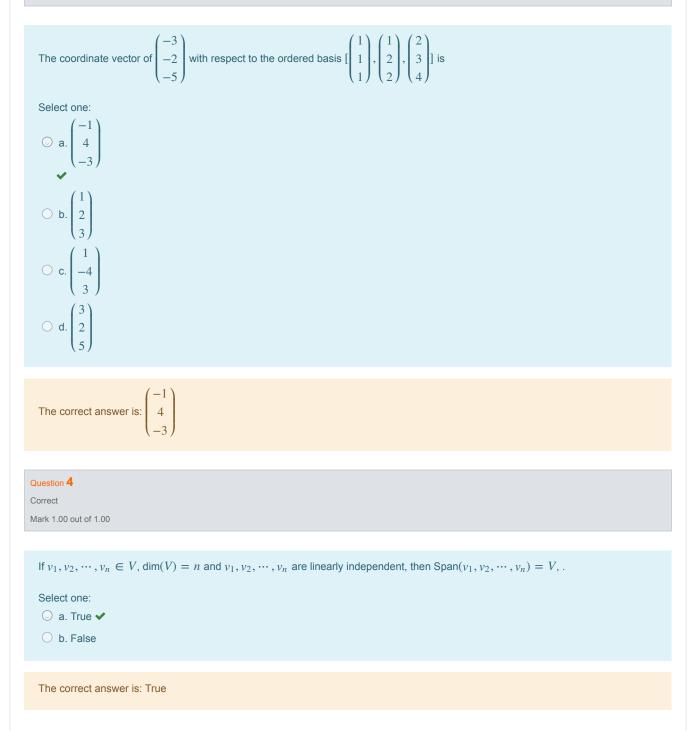
🔘 a. True 🗸

 $\bigcirc\,$ b. False

The correct answer is: True

Correct

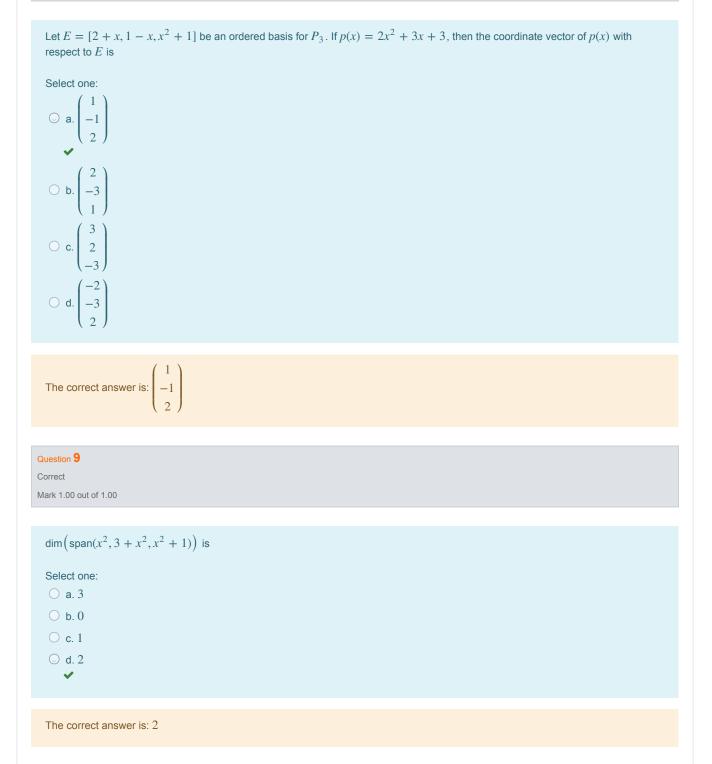
Mark 1.00 out of 1.00



Question 5 Correct Mark 1.00 out of 1.00
The coordinate vector of $6 + 8x$ with respect to the basis $[2x, 2]$ is $(4, 3)^T$ Select one: \bigcirc a. False \bigcirc b. True \checkmark
The correct answer is: True
Question 6 Correct Mark 1.00 out of 1.00
If $f_1, f_2, \dots, f_n \in C^{n-1}[a, b]$ and $W[f_1, f_2, \dots, f_n](x_0) \neq 0$ for some $x_0 \in [a, b]$, then f_1, f_2, \dots, f_n are Select one: a. linearly dependent b. form a spanning set for $C^{n-1}[a, b]$ c. linearly independent.
The correct answer is: linearly independent.
Question 7 Correct Mark 1.00 out of 1.00
Let <i>V</i> be a vector space, $v_1, v_2,, v_n \in V$ be linearly independent, then the vectors $v_1, v_2,, v_{n-1}$ are linearly independent. Select one: \bigcirc a. False \bigcirc b. True \checkmark
The correct answer is: True

Correct

Mark 1.00 out of 1.00



Correct

Mark 1.00 out of 1.00

If $\{v_1, v_2, v_3, v_4\}$ is a basis for a vector space V , then the set $\{v_1, v_2, v_3\}$ is

Select one:

 \checkmark

- \bigcirc a. linearly independent and a spanning set for *V*.
- \bigcirc b. linearly dependent and not a spanning set for *V*.
- \bigcirc c. linearly independent and not a spanning set for *V*.
- O d. linearly dependent and a spanning set

The correct answer is: linearly independent and not a spanning set for V.

Question 11

Correct Mark 1.00 out of 1.00

Which of the following is not a basis for the corresponding space

Select one: () a. $\{5 - x, x - 1\}; P_2$ () b. $\{(-2, -1, -1)^T, (-3, -3, 0)^T, (2, 0, 2)^T\}; \mathbb{R}^3$ () c. $\{(1, 1)^T, (2, -3)^T\}; \mathbb{R}^2$ () d. $\{x + 4, 1 - x^2, x^2 + x + 3\}; P_3$

The correct answer is: $\{(-2, -1, -1)^T, (-3, -3, 0)^T, (2, 0, 2)^T\}; \mathbb{R}^3$

Question 12

Correct Mark 1.00 out of 1.00

If A is a 4×3 matrix such that $N(A) = \{0\}$, and b can be written as a linear combination of the columns of A, then

Select one:

- \bigcirc a. The system Ax = b is inconsistent
- b. The system Ax = b has exactly one solution
- \bigcirc c. The system Ax = b has exactly two solutions
- \bigcirc d. The system Ax = b has infinitely many solutions

The correct answer is: The system Ax = b has exactly one solution

Question 13 Correct
Mark 1.00 out of 1.00
Every linearly independent set of vectors in \mathbb{R}^4 has exactly 4 vectors.
Select one:
 ○ a. True ○ b. False ✓
The correct answer is: False
Question 14 Correct
Mark 1.00 out of 1.00
If the columns of A , are linearly independent and $b \in \mathbb{D}^n$ then the system $A_X = b$ has
If the columns of $A_{n \times n}$ are linearly independent and $b \in \mathbb{R}^n$, then the system $Ax = b$ has
Select one:
○ b. infinitely many solutions
○ c. exactly 2 solutions
○ d. exactly one solution
The correct answer is: exactly one solution
45
Question 15 Correct
Mark 1.00 out of 1.00
If A is a 3 \times 3-matrix, and $Ax = 0$ has only the zero solution, then rank(A) =
Select one:
○ a. 1
○ b. 2
○ c. 0 ○ d. 3
 ✓
The correct answer is: 3

Correct

Mark 1.00 out of 1.00

If $\{v_1, v_2, v_3, v_4\}$ forms a spanning set for a vector space V, dim(V) = 3, v_4 can be written as a linear combination of v_1, v_2, v_3 , then

Select one:

 \checkmark

 \bigcirc a. { v_1, v_2, v_3 } is a basis for V

 \bigcirc b. { v_1, v_2, v_3 } are linearly dependent

 \bigcirc c. v_1 can be written as a linear combination of v_2, v_3, v_4

 \bigcirc d. { v_1 , v_2 , v_3 } do not form a spanning set for V

The correct answer is: $\{v_1, v_2, v_3\}$ is a basis for V

Question **17** Correct Mark 1.00 out of 1.00

The functions $\sin x$, $\cos x$, $\sin(2x)$ in $C^2[0, 2\pi]$ are

Select one:

a. linearly dependent

 \bigcirc b. linearly independent 🗸

The correct answer is: linearly independent

Question **18** Correct Mark 1.00 out of 1.00

let A be a 4×7 -matrix, if the row echelon form of A has 2 nonzero rows, then dim(column space of A) is

The correct answer is: 2

Question **19** Correct

Mark 1.00 out of 1.00 Let E = [2 + x, 3 - x], F = [x, 1] be ordered bases for P_2 . The transition matrix from E to F is Select one: $\bigcirc a. \begin{pmatrix} 3 & -1 \\ 2 & 1 \end{pmatrix}$ \bigcirc b. $\begin{pmatrix} 2 & 3 \\ 1 & -1 \end{pmatrix}$ $\bigcirc c. \begin{pmatrix} 1 & -1 \\ 2 & 3 \end{pmatrix}$ $\bigcirc d. \begin{pmatrix} 2 & 3 \\ -1 & 1 \end{pmatrix}$ The correct answer is: $\begin{pmatrix} 1 & -1 \\ 2 & 3 \end{pmatrix}$ Question 20 Correct Mark 1.00 out of 1.00 If $T_{n \times n}$ is a transition matrix between two bases for a vector space V, dim(V) = n > 0, then Select one: \bigcirc a. det(*T*) = 1 \bigcirc b. *T* is nonsingular ~ \bigcirc c. nullity(*T*) = *n* \bigcirc d. rank(*T*) = 1 The correct answer is: T is nonsingular Question 21 Correct Mark 1.00 out of 1.00 The vectors $\{(1, -1, 1)^T, (1, -3, 2)^T, (1, -2, 0)^T\}$ form a basis for \mathbb{R}^3 . Select one: 🔘 a. True 🗸 O b. False The correct answer is: True

Correct

Mark 1.00 out of 1.00

The vectors $\{x + 1, x^2 + x + 3, x^2 + x + 2\}$ form a basis for P_3 .

Select one:

🔘 a. True 🗸

🔘 b. False

The correct answer is: True

Question 23

Correct

Mark 1.00 out of 1.00

Let
$$S = \{ \begin{pmatrix} x \\ y \end{pmatrix} \in \mathbb{R}^2 : x - y = 0 \}$$
, then S is a subspace of \mathbb{R}^2 .

Select one:

🔘 a. False

🔘 b. True 🗸

The correct answer is: True

Question 24 Correct Mark 1.00 out of 1.00

Every linearly independent set of vectors in $\ensuremath{\mathbb{R}}^3$ contains at most 3 vectors.

Select one:

🔘 a. True 🗸

O b. False

The correct answer is: True

Correct

Mark 1.00 out of 1.00

If
$$A = \begin{pmatrix} 1 & -2 & 1 & 0 \\ -1 & 2 & 2 & 0 \\ 2 & -1 & 0 & 0 \end{pmatrix}$$
, then rank $(A) = 3$

Select one:

🔘 a. False

🔘 b. True 🗸

The correct answer is: True

Question 26

Correct Mark 1.00 out of 1.00

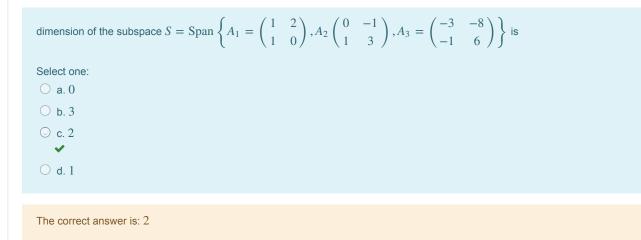
The rank of
$$A = \begin{pmatrix} 1 & 4 & 2 & 2 & 1 \\ 2 & 6 & 1 & 2 & -1 \\ 3 & 10 & 0 & 1 & 0 \end{pmatrix}$$
 is
Select one:
 \bigcirc a. 1
 \bigcirc b. 2
 \bigcirc c. 3

○ d. 4

The correct answer is: 3

Question 27

Correct Mark 1.00 out of 1.00



Question 28 Correct Mark 1.00 out of 1.00
If <i>A</i> , <i>B</i> are two row equivalent <i>m</i> × <i>n</i> -matrices, then rank(<i>A</i>) =rank(<i>B</i>) Select one: ○ a. False ○ b. True ✓
The correct answer is: True
Question 29 Correct Mark 1.00 out of 1.00
If A is a 3×3 -matrix, and $Ax = 0$ has only the zero solution, then nullity(A) = Select one: \bigcirc a. 3 \bigcirc b. 2 \bigcirc c. 0 \checkmark \bigcirc d. 1
The correct answer is: 0
Question 30 Correct Mark 1.00 out of 1.00
Let <i>V</i> be a vector space, $v_1, v_2, v_3 \in V$ such that v_1, v_2 are linearly independent, v_2, v_3 are linearly independent, and v_1, v_3 are linearly independent, then v_1, v_2, v_3 are linearly independent. Select one: \bigcirc a. True \bigcirc b. False \checkmark
The correct answer is: False

a r 24
Question 31
Correct
Mark 1.00 out of 1.00
If A is an $m \times n$ -matrix, $m \neq n$, then either the rows or the columns of A are linearly independent
Select one:
◯ a. False ✔
O b. True
The correct answer is: False
Question 32
Correct
Mark 1.00 out of 1.00
If A is an $n \times n$ singular matrix, then
Select one:
\bigcirc a. $N(A) = \{0\}$
\bigcirc b. The columns of A are linearly dependent
 b. The columns of A are initially dependent
\bigcirc c. The rows of A are linearly independent
\bigcirc d. rank(A) = n
\bigcirc d. rank(1) = n
The correct answer is: The columns of A are linearly dependent
Jump to 🗢
Announcements >

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```
        Started on
State
        Sunday, 11 April 2021, 8:32 AM

        State
        Finished

        Completed on
Time taken
        Sunday, 11 April 2021, 9:01 AM

        Grade
        9.00 out of 12.00 (75%)
```

Question 1

Correct Mark 1.00 out of 1.00

Let A,B are n imes n-matrices with AB=0 , if B eq 0 , then A is nonsingular.

Select one:

- 🔘 a. False
- 🔵 b. True

The correct answer is: False

Question 2	
Correct	
Mark 1.00 out of 1.00	

Let A be a 3×4 matrix, and let B be a 4×4 matrix which has a column of zeros, then AB has a column of zeros.

Select one:			
💿 a. True		✓	

🔵 b. False

The correct answer is: True

Correct Mark 1.00 out of 1.00

If x_1 , x_2 are solutions to Ax = b, then $rac{1}{4}x_1 + rac{3}{4}x_2$ is a solution of the system Ax = 0.

Select one:

- 🔵 a. True
- 💿 b. False

The correct answer is: False

Question 4

Incorrect Mark 0.00 out of 1.00

Let
$$A=egin{pmatrix}1&2&3&0\\0&-1&1&1\\2&5&5&-1\end{pmatrix}$$
 and $b=egin{pmatrix}2\\1\\4\end{pmatrix}$. The system $Ax=b$

Select one:

- a. is inconsistent
- b. has a unique solution
- c. has exactly three solutions.
- d. has infinitely many solutions

The correct answer is: is inconsistent

Question 5	
Incorrect	
Mark 0.00 out of 1.00	

Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (4,2,5)^T$. Then the third column of the matrix A is

Select one:

a. (4, -1, 1)^T.
b. (1, 1, 4)^T.
c. (1, -1, -4)^T.
d. (1, -1, 4)^T.

The correct answer is: $(1, -1, 4)^T$.

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Correct Mark 1.00 out of 1.00

If A is a nonsingular and symmetric matrix, then

Select one:

- \odot a. A^{-1} is singular and not symmetric
- \odot b. A^{-1} is singular and symmetric
- \odot c. A^{-1} is nonsingular and symmetric
- \odot d. A^{-1} is nonsingular and not symmetric

The correct answer is: A^{-1} is nonsingular and symmetric

Question 7	
Correct	
Mark 1.00 out of 1.00	

If A is a 3 imes 5 matrix, then the system Ax=0

Select one:

- a. has no nonzero solution.
- \bigcirc b. has only the zero solution
- c. is inconsistent
- In the second second

The correct answer is: has infinitely many solutions

Question 8	
Incorrect	
Mark 0.00 out of 1.00	

If E is an elementary matrix of type III, then $\det(E)=-1$

Select one:

- 🖲 a. True
- 🔘 b. False

The correct answer is: False

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Correct Mark 1.00 out of 1.00

An n imes n matrix A is invertible if and only if

Select one:

- \odot a. there exists a matrix B such that AB=I
- b. All of the above
- \bigcirc c. |A| = 0
- \bigcirc d. Ax = 0 has nonzero solutions

The correct answer is: there exists a matrix B such that AB = I

Question 10	
Correct	
Mark 1.00 out of 1.00	

If E is an elementary matrix then one of the following statements is not true

Select one:

- \odot a. *E* is a semmetric matrix.
- \odot b. E^{-1} is an elementary matrix.
- \odot c. E is nonsingular.
- \bigcirc d. E^T is an elementary matrix.

The correct answer is: E is a semmetric matrix.

Question 11 Correct Mark 1.00 out of 1.00

If A = LU is the LU-factorization of a matrix A, and A is singular, then

Select one:

- \bigcirc a. L and U are both nonsingular
- \bigcirc b. L and U are both singular
- \odot c. L is singular and U is nonsigular
- \odot d. U is singular and L is nonsigular

The correct answer is: U is singular and L is nonsigular

${\sf Question}~12$

Correct Mark 1.00 out of 1.00

$$\begin{array}{c} A = p\,matrix1\&-1\&1 \\ {}^{\rm Let}3\&-2\&2 \\ -2\&1\&3[\end?]p\,matrix \end{array}, {\rm then\,\,det}(A) = \\ \end{array}$$

Select one:

a. 0
b. 8
c. 4
d. 1

The correct answer is: 4

◀ Quiz 3

Jump to...

Quiz 1 (chapter one) ►

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Data retention summary

Dashboard / My courses / INTRODUCTION TO LINEAR ALGEBRA-Lecture-1202 - MATH234 - 1 / General / Short Exam 1

```
Started onSunday, 11 April 2021, 8:35 AMStateFinishedCompleted onSunday, 11 April 2021, 9:05 AMTime taken29 mins 19 secsGrade10.00 out of 12.00 (83%)
```

Question 1

Correct Mark 1.00 out of 1.00

If AB=AC, and |A|
eq 0, then

Select one:

• a. B = C. • b. A = C• c. $B \neq C$

The correct answer is: B = C.

Question 2	
Correct	
Mark 1.00 out of 1.00	

If A is an n imes n-matrix with positive entries, then $\det(A) \geq 0$.

Select one:

🔘 a. False

🔵 b. True

The correct answer is: False

Select one:

- 🖲 a. False
- 🔵 b. True

The correct answer is: False

Question 4	
Correct	
Mark 1.00 out of 1.00	

An n imes n matrix A is invertible if and only if

Select one:

- \bigcirc a. All of the above
- \odot b. there exists a matrix B such that AB=I
- \odot c. |A|=0
- \bigcirc d. Ax = 0 has nonzero solutions

The correct answer is: there exists a matrix B such that AB = I

Question 5	
Correct	
Mark 1.00 out of 1.00	

If A is row equivalent to B, then det(A) = det(B).

Select one:

- a. False
- 🔵 b. True

The correct answer is: False

QL	est	ion	6

Correct Mark 1.00 out of 1.00

Let A be an n imes n-matrix in reduced row echelon form and A
eq I , then

Select one:

- \odot a. A is singular
- \bigcirc b. det(A) = 1
- \odot c. A is the zero matrix
- \bigcirc d. A is nonsingular

The correct answer is: A is singular

Question 7	
Correct	
Mark 1.00 out of 1.00	

If U is the reduced row echelon form of an $n imes n$ nonsingular matrix, then U =	$=I_n$
--	--------

Select one:

- 🔵 a. False
- 💿 b. True

The correct answer is: True

Question 8	
Correct	
Mark 1.00 out of 1.00	

If A is singular and B is nonsingular n imes n-matrices, then AB is

Select one:

- a. singular
- 🔘 b. nonsingular
- c. may or may not be singular
- d. none of the above

The correct answer is: singular

Question 9

Correct Mark 1.00 out of 1.00

Let
$$A=egin{pmatrix} 1&-1&1\\3&-2&2\\-2&5&3 \end{pmatrix}$$
 , then $\det(A)=$

Select one:

a. 0
b. 9
c. 5
d. 8

The correct answer is: 8

Question 10

Incorrect Mark 0.00 out of 1.00

If
$$A = \begin{pmatrix} 1 & -2 & 5 \\ 4 & -5 & 8 \\ -3 & 3 & -3 \end{pmatrix}$$
 and $b = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$, then the system $Ax = b$ is consistent if and only if

Select one:

a. b₁ - b₂ - b₃ = 0
b. b₂ - b₁ - b₃ = 0
c. b₃ + b₁ + b₂ = 0
d. b₃ - b₁ - b₂ = 0

The correct answer is: $b_1-b_2-b_3=0$

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6/25/2021

Incorrect Mark 0.00 out of 1.00

Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (4,2,5)^T$. Then the third column of the matrix A is

Select one:

• a. $(1, -1, -4)^T$. • b. $(4, -1, 1)^T$. • c. $(1, -1, 4)^T$. • d. $(1, 1, 4)^T$.

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The correct answer is: $(1, -1, 4)^T$.

Question 12	
Correct	
Mark 1.00 out of 1.00	

If A is a nonsingular and symmetric matrix, then

Select one:

- \odot a. A^{-1} is nonsingular and symmetric
- \odot b. A^{-1} is nonsingular and not symmetric
- \odot c. A^{-1} is singular and not symmetric
- \bigcirc d. A^{-1} is singular and symmetric

The correct answer is: A^{-1} is nonsingular and symmetric

◀ Quiz 3

Jump to...

Quiz 1 (chapter one) ►

Data retention summary

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```
Started onSunday, 9 May 2021, 11:36 AMStateFinishedCompleted onSunday, 9 May 2021, 12:59 PMTime taken1 hour 22 minsGrade30 out of 32 (94%)
```

Question **1** Correct

Mark 1 out of 1

One of the follwoing sets is a subspace of P_4

Select one:

a.
$$S = \{f(x) \in P_4 : f(1) = 0\}$$
b. $S = \{f(x) \in P_4 : f(1) = 1\}$
c. $S = \{f(x) \in P_4 : f(0) = 0, \text{and } f'(0) = 2\}$
d. $S = \{f(x) \in P_4 : f(0) = 1\}$

The correct answer is: $S = \{f(x) \in P_4 : f(1) = 0\}$

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Question 2 Correct Mark 1 out of 1

Let A be a 3×3 -matrix with $a_1 = a_2$. If $b = a_2 - a_3$, where a_1, a_2, a_3 ar the columns of A, then a solution to the system Ax = b is

Select one:

a.
$$x = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}$$
b.
$$x = \begin{pmatrix} 0 \\ 0 \\ 2 \end{pmatrix}$$
c.
$$x = \begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix}$$
d.
$$x = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$$

The correct answer is:
$$x=egin{pmatrix}1\\0\\-1\end{bmatrix}$$

Question $\mathbf{3}$

Correct Mark 1 out of 1

Let $A = egin{pmatrix} 1 & 1 & 0 \ 1 & a & 1 \ 1 & 1 & 2 \end{pmatrix}$. the value(s) of a that make A nonsingular

Select one:

a. $a \neq 1$ b. $a = \frac{1}{2}$ c. $a \neq \frac{1}{2}$ d. a = 1

The correct answer is: a
eq 1

Question 4

Correct

Mark 1 out of 1

If the row echelon form of (A|b) is $\begin{pmatrix} 1 & 0 & -2 & -1 & | & -2 \\ 0 & 1 & 1 & -1 & | & -1 \\ 0 & 0 & 1 & 1 & | & 1 \end{pmatrix}$ then the general form of the solutions is given by

Select one:

$$\bigcirc a. \qquad x = \begin{pmatrix} -2 - \alpha \\ -1 + 2\alpha \\ -\alpha \\ \alpha \end{pmatrix}$$
$$\bigcirc b. \qquad x = \begin{pmatrix} \alpha \\ 2 - \alpha \\ \alpha \\ \alpha \end{pmatrix}$$
$$\bigcirc c. \qquad x = \begin{pmatrix} -2 - \alpha \\ \alpha \\ 1 \\ 1 \end{pmatrix}$$
$$\bigcirc d. \qquad x = \begin{pmatrix} -\alpha \\ -2 + 2\alpha \\ 1 - \alpha \\ \alpha \end{pmatrix}$$

The correct answer is:
$$x=egin{pmatrix} -lpha\\ -2+2lpha\\ 1-lpha\\ lpha\end{pmatrix}$$

Question 5	
Correct	
Mark 1 out of 1	

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If A,B are n imes n-skew-symmetric matrices(A is skew symmetric if $A^T=-A$), then AB+BA is symmetric

Select one:

🔵 a. False

💿 b. True

The vectors $\{x+1, x^2+x+1, x^2+2x+1\}$ form a spanning set for P_3 .

Sel	lect	one:
20	ECI	ULE.

- 🔘 a. False
- 🔵 b. True

The correct answer is: True

Question 7	
Correct	
Mark 1 out of 1	

If AB=0, where A and B are n imes n nonzero matrices. Then

Select one:

- \odot a. both A, B are singular.
- \bigcirc b. either A or B is nonsingular
- \bigcirc c. both A, B are nonsingular.
- \bigcirc d. either A=0 or B=0

The correct answer is: both A, B are singular.

Question 8	
Correct	
Mark 1 out of 1	

Let
$$S=\{inom{x}{y}\in \mathbb{R}^2: x+y=0\}$$
 , then S is a subspace of $\mathbb{R}^2.$

Select one:

- 💿 a. True
- 🔵 b. False

The correct answer is: True

X

Question 9 Incorrect Mark 0 out of 1

If A is symmetric and skew symmetric then A = 0. (A is skew symmetric if $A = -A^T$).

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Select one:

- 🖲 a. False
- 🔵 b. True

The correct answer is: True

Question 10 Correct

Mark 1 out of 1

If
$$(A|b) = \begin{pmatrix} 1 & -1 & -1 & | & 2 \\ -2 & 3 & 1 & | & -1 \\ 1 & 1 & \alpha & | & \beta \end{pmatrix}$$
, then the system is inconsistent if and only if

Select one:

- \odot a. lpha
 eq -3 and eta any number
- \odot b. lpha=-3 and eta
 eq 8
- \odot c. lpha
 eq -3 and eta
 eq 8
- \odot d. lpha=-3 and eta=8

The correct answer is: lpha=-3 and eta
eq 8

Question 11

Correct Mark 1 out of 1

If A and B are singular matrices, then A+B is also singular.

Select one:

🔘 a. False

🔵 b. True

The correct answer is: False

Question 12 Correct Mark 1 out of 1

If A, B are n imes n nonsingular matrices, then $A^2 - B^2 = (A+B)(A-B).$

Select one:

- 🖲 a. False
- 🔵 b. True

The correct answer is: False

Question 13	
Correct	
Mark 1 out of 1	

If v_1, v_2, \dots, v_k are vectors in a vector space V, and Span $(v_1, v_2, \dots, v_k) =$ Span $(v_1, v_2, \dots, v_{k-1})$, then v_k can be written as a linear combination of v_1, v_2, \dots, v_{k-1}

Select one:

- 🖲 a. True
- 🔵 b. False

The correct answer is: True

Correct	
Mark 1 out of 1	

If A,B,C are n imes n-matrices with A nonsingular and AB=AC , then B=C

Select one:

- 🔘 a. False
- 💿 b. True

Question 15 Correct Mark 1 out of 1

The adjoint of the matrix
$$\begin{pmatrix} -5 & -2 \\ -4 & -3 \end{pmatrix}$$
 is

Select one:

 $\begin{array}{c} \circ a. & \begin{pmatrix} 5 & -4 \\ -2 & 3 \end{pmatrix} \\ \bullet b. & \begin{pmatrix} -3 & 2 \\ 4 & -5 \end{pmatrix} \\ \circ c. & \begin{pmatrix} -5 & 3 \\ 2 & -4 \end{pmatrix} \\ \circ d. & \begin{pmatrix} -4 & -2 \\ -3 & -5 \end{pmatrix} \end{array}$

The correct answer is:
$$egin{pmatrix} -3 & 2 \ 4 & -5 \end{pmatrix}$$

Question 16	
Correct	
Mark 1 out of 1	

If y, z are solutions to Ax=b, then $rac{1}{4}y+rac{3}{4}z$ is a solution of the system Ax=b.

Select one:

- 🖲 a. True
- 🔘 b. False

Question 17 Correct Mark 1 out of 1



Select one:

- 🔵 a. False
- 🖲 b. True

The correct answer is: True

Question 18

Correct

Mark 1 out of 1

If
$$(2A)^{-1}=egin{pmatrix} 3&2\5&4 \end{pmatrix}$$
 , then $A=$

Select one:

• a.
$$\begin{pmatrix} 1 & \frac{-1}{2} \\ \frac{-5}{4} & \frac{3}{4} \end{pmatrix}$$

• b. $\begin{pmatrix} 2 & -1 \\ \frac{-5}{2} & \frac{3}{2} \end{pmatrix}$
• c. $\begin{pmatrix} 4 & -2 \\ -5 & 3 \end{pmatrix}$
• d. $\begin{pmatrix} 8 & -4 \\ -10 & 6 \end{pmatrix}$

The correct answer is: $\begin{pmatrix} 1 & \frac{-1}{2} \\ \frac{-5}{4} & \frac{3}{4} \end{pmatrix}$

Question 19
Correct
Mark 1 out of 1

Let V be a vector space, $\{v_1, v_2, \ldots, v_n\}$ a spanning set for V, and $v \in V$, then the vectors $\{v_1, v_2, \ldots, v_n, v\}$ form a spanning set for V.

Select one:

🔵 a. False

💿 b. True

The correct answer is: True

Question 20	
Correct	
Mark 1 out of 1	

If AB=AC, and |A|
eq 0, then

Select one:

 \odot a. B
eq C

 \odot b. A=0

 \odot c. B = C.

 \bigcirc d. A = C

The correct answer is: B = C.

Question 21	
Correct	
Mark 1 out of 1	

In the n imes n-linear system Ax = b, if A is singular and b is a linear combination of the columns of A then the system has

Select one:

- a. exactly two solutions
- b. a unique solution
- c. infinitely many solutions

d. no solution

The correct answer is: infinitely many solutions

If A is a 4 imes 3 matrix such that $N(A) = \{0\}$, and b can be written as a linear combination of the columns of A, then

Select one:

- \odot a. The system Ax=b has exactly one solution
- \odot b. The system Ax=b is inconsistent
- \odot c. The system Ax=b has infinitely many solutions
- \odot d. The system Ax=b has exactly two solutions

The correct answer is: The system Ax = b has exactly one solution

Question 23	
Correct	
Mark 1 out of 1	

If E is an elementary matrix then one of the following statements is false

Select one:

- \odot a. E^{-1} is an elementary matrix.
- \odot b. E is diagonal matrix.
- \odot c. E is nonsingular.
- \bigcirc d. E^T is an elementary matrix.

The correct answer is: E is diagonal matrix.

Question 24	
Correct	
Mark 1 out of 1	

The vectors $\{(1,-1,1)^T,(1,-2,2)^T,(1,-2,1)^T\}$ form a spanning set for $\mathbb{R}^3.$

Select one:

🔵 a. False

💿 b. True

If A is a 3 imes 3 matrix with $\det(A)=-3.$ Then $\det(adj(A))=$

Select one:

- a. -3.
- \bigcirc b. -27.
- c. 9.
- $\bigcirc \text{ d. } -9.$

The correct answer is: 9.

Question 26	
Correct	
Mark 1 out of 1	

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If A is a singular matrix, then A can be written as a product of elementary matrices.

Select one:

🔵 a. True

🖲 b. False

The correct answer is: False

Question 27

Correct Mark 1 out of 1

Let
$$A=egin{pmatrix} 1&-1&1\\ 3&-2&2\\ -2&-1&3 \end{pmatrix}$$
 , then $\det(A)=$

Select one:

🔵 a. 5

- \odot b. 3
- c. 2
- \bigcirc d. 0

The correct answer is: 2

Question 28		
Correct		
Mark 1 out of 1		

Let $S = \{f \in C[-1,1] : f \text{ is an odd function }\}$, then S is a subspace of C[-1,1].

Select one:

- 🖲 a. True
- 🔘 b. False

The correct answer is: True

Question 29	
Correct	
Mark 1 out of 1	

An n imes n matrix A is singular if and only if

Select one:

- \odot a. there exists a matrix B such that AB=I
- \odot b. A=I
- \odot c. Ax = 0 has only the zero solution
- \odot d. |A|=0

The correct answer is: |A|=0

Question 30	
Correct	
Mark 1 out of 1	

If A is a singular n imes n-matrix, $b\in \mathbb{R}^n$, then the system Ax=b

Select one:

- a. has either no solution or an infinite number of solutions
- \bigcirc b. has infinitely many solutions.
- c. has a unique solution
- Od. is inconsistent

The correct answer is: has either no solution or an infinite number of solutions

Question 31 Correct Mark 1 out of 1

If
$$(A|b) = \begin{pmatrix} 1 & 1 & 2 & | & 4 \\ 2 & -1 & 2 & | & 6 \\ 0 & 3 & 2 & | & 1 \end{pmatrix}$$
 is the augmented matrix of the system $Ax = b$ then the system has no solution

Select one:

🔘 a. False

💿 b. True

The correct answer is: True

Question 32	
Correct	
Mark 1 out of 1	

Let $(1,2,0)^T$ and $(2,1,1)^T$ be the first two columns of a 3×3 matrix A and $(1,1,1)^T$ be a solution of the system $Ax = (1,1,-2)^T$. Then the third column of the matrix A is

Select one:

a. (1,2,-1)^T.
b. (-2,-2,-3)^T.
c. (2,2,3)^T.
d. (-1,0,1)^T.

The correct answer is: $(-2, -2, -3)^T$.

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