

Started on Monday, 19 October 2020, 10:01 AM

State Finished

Completed on Monday, 19 October 2020, 10:31 AM

Time taken 30 mins 1 sec

Marks 23.00/25.00

Grade 9.20 out of 10.00 (92%)

Question 1

Correct

Mark 2.00 out of 2.00

If a matrix A is row equivalent to I , then A is nonsingular.

Select one:

- a. True ✓
 b. False

Question 2

Correct

Mark 2.00 out of 2.00

If a matrix A is nonsingular, then the matrix A^T is also nonsingular.

Select one:

- a. True ✓
 b. False

Question 3

Correct

Mark 2.00 out of 2.00

If A and B are $n \times n$ nonsingular matrices, then AB is also nonsingular.

Select one:

- a. True ✓
 b. False

Question 4

Correct

Mark 2.00 out of 2.00

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

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 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.

Select one:

- a. True
 b. False ✓

Question 7

Correct

Mark 3.00 out of 3.00

If $(A|b) = \left[\begin{array}{ccc|c} 1 & 0 & 2 & 1 \\ -1 & 1 & -1 & 0 \\ -1 & 0 & \alpha & \beta \end{array} \right]$ is the augmented matrix of the system $Ax = b$. Answer the following questions.

The system has no solution if

- $\alpha = -2$ and $\beta \neq -1$ ✓
- $\alpha = -2$ and $\beta = -1$
- $\alpha \neq -2$ and $\beta \neq -1$
- $\alpha \neq -2$ and $\beta = -1$

The system has exactly one solution if

- $\alpha = -2$ and $\beta = -1$
- $\alpha \neq -2$ ✓
- $\alpha = -2$
- $\alpha \neq -2$ and $\beta \neq -1$

The system has infinitely many solutions if

- $\alpha \neq -2$ and $\beta \neq -1$
- $\alpha = -2$ and $\beta \neq -1$
- $\alpha = -2$ and $\beta = -1$ ✓
- $\alpha \neq -2$ and $\beta = -1$

Question 8

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 9

Incorrect

Mark 0.00 out of 2.00

A homogeneous system can have a nontrivial solution.

Select one:

- a. True
- b. False ✗

Question 10

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

Question 11

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 12

Correct

Mark 2.00 out of 2.00

The sum of two $n \times n$ nonsingular matrices is also nonsingular.

Select one:

- a. True
- b. False ✓

◀ محاضرات

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Quiz 2 ▶

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Started on Monday, 19 October 2020, 5:39 PM

State Finished

Completed on Monday, 19 October 2020, 5:57 PM

Time taken 18 mins 13 secs

Grade 10 out of 10 (100%)

Question 1

Correct

Mark 1 out of 1

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

Select one:

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

The correct answer is: either A or B is singular

Question 2

Correct

Mark 1 out of 1

If A, B, C are $n \times n$ -matrices with $AB = AC$, then $B = C$

Select one:

- a. False ✓
- b. True

The correct answer is: False

Question 3

Correct

Mark 1 out of 1

The sum of two elementary matrices is elementary

Select one:

- a. False ✓
- b. True

The correct answer is: False

Question 4

Correct

Mark 1 out of 1

If A, B are $n \times n$ -symmetric matrices, then $AB - BA$ is skew symmetric

Select one:

- a. False
- b. True ✓

The correct answer is: True

Question 5

Correct

Mark 1 out of 1

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. infinitely many solutions ✓
- c. a unique solution
- d. can not tell

The correct answer is: infinitely many solutions

Question 6

Correct

Mark 1 out of 1

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. none of the above
- c. is inconsistent
- d. has only the zero solution. ✓

The correct answer is: has only the zero solution.

Question 7

Correct

Mark 1 out of 1

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

Select one:

- a. $\alpha = -3$ and $\beta = 1$
- b. $\alpha \neq -3$ and $\beta \neq 1$
- c. $\alpha = -3$ and $\beta \neq 1$ ✓
- d. $\alpha \neq -3$ and β any number

The correct answer is: $\alpha = -3$ and $\beta \neq 1$

Question 8

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

Mark 1 out of 1

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

Select one:

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



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

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

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

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

Question 10

Correct

Mark 1 out of 1

If B is a 3×3 matrix such that $B^2 = B$. One of the following is always true

Select one:

a. $B^5 = B$.



b. $B = 0$.

c. $B = I$.

d. B is nonsingular.

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

[◀ Quiz 2](#)[Homework 1 ▶](#)