Started on Tuesday, 15 December 2020, 8:30 AM
State Finished
Completed on Tuesday, 15 December 2020, 8:43 AM
Time taken 12 mins 54 secs
Grade **6.00** out of 6.00 (**100**%)

Question **1**
Correct
Mark 1.00 out of 1.00

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

Select one:
- a. form a spanning set for $C^{n-1}[a,b]$
- b. linearly independent. ✔
- c. linearly dependent.

The correct answer is: linearly independent.

Question **2**
Correct
Mark 1.00 out of 1.00

The vectors $\{(1,-1,1)^T, (1,-3,2)^T, (1,-2,0)^T\}$ in $\mathbb{R}^3$ are

Select one:
- a. linearly dependent
- b. linearly independent ✔

The correct answer is: linearly independent

Question **3**
Correct
Mark 1.00 out of 1.00

The set $S = \left\{ \begin{pmatrix} x \\ y \\ x+y+2z \end{pmatrix} : x, y, z \in \mathbb{R} \right\}$ is a subspace of $\mathbb{R}^3$

Select one:
- a. True ✔
- b. False

The correct answer is: True

Question **4**
Correct
Mark 1.00 out of 1.00

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

Select one:
- a. 2 ✔
- b. 3
- c. 1
- d. 0

The correct answer is: 2

Question **5**

Correct

Mark 1.00 out of 1.00

If $v_1, v_2, \cdots, v_n$ are linearly independent vectors in a vector space V, and $c_1v_1 + c_2v_2 + \cdots + c_nv_n = 0$, then $c_1, c_2, \cdots, c_n$ are all zero scalars.

Select one:

- a. True ✔
- b. False

The correct answer is: True

Question **6**

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, 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 in V.
- 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 on Wednesday, 23 December 2020, 10:01 AM
State Finished
Completed on Wednesday, 23 December 2020, 10:20 AM
Time taken 18 mins 19 secs
Marks 8.00/18.00
Grade **4.44** out of 10.00 (**44**%)

Question **1**

Incorrect

Mark 0.00 out of 2.00

dim(span$\{1-x, x^2, 3+x^2, 1+x^2\}$) equals

Select one:

- a. 0
- b. 3
- c. 1
- d. 2 ✖

The correct answer is: 3

Question **2**

Correct

Mark 2.00 out of 2.00

One of the following is not a basis for P_3:

Select one:

- a. $\{1, 2x, x^2-x\}$
- b. $\{x, x^2+3, x^2-5\}$
- c. $\{x-1, x^2+1, x^2-1\}$
- d. $\{x^2+1, x^2-1, 2\}$ ✔

The correct answer is: $\{x^2+1, x^2-1, 2\}$

Question **3**

Correct

Mark 2.00 out of 2.00

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 n linearly independent vectors in V span V. ✔
- 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**

Incorrect

Mark 0.00 out of 2.00

The set of vectors $\{(1,a)^T,(b,1)^T\}$ is a spanning set for R^2 if

Select one:

- a. $a \neq b$ ✖
- b. $ab \neq 1$
- c. $ab = 1$
- d. $a \neq 1$ and $b \neq 1$

The correct answer is: $ab \neq 1$

Question **5**

Incorrect

Mark 0.00 out of 2.00

Suppose that a vector space V contains n linearly independent vectors, then

Select one:

- a. Any n vectors in V are linearly independent
- b. If a set S spans V then S must contain at most n vectors
- c. Any set containing more than n vectors is linearly dependent ✖
- 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

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:

- a. True
- b. False ✔

The correct answer is: False

Question **7**

Complete

Not graded

Let V is a vector space with $\dim(V) = 4$, if $v_1, v_2, v_3, v_4 \in V$, then span $\{v_1, v_2, v_3, v_4\} = V$.

Select one:

- a. False
- b. True

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

Mark 2.00 out of 2.00

If V is a vector space with $\dim(V) = n$, then any $n+1$ vectors in V are linearly dependent.

Select one:

- a. True ✔
- b. False

The correct answer is: True

Question 10

Incorrect

Mark 0.00 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

If x_1 and x_2 are linearly independent in R^3, then $\exists x \in R^3$ such that $\text{span}\{x_1, x_2, x\} = R^3$.

Select one:

- a. True
- b. False

The correct answer is: True