Started on	Wednesday, 4 May 2022, 2:40 PM
State	Finished
Completed on	Wednesday, 4 May 2022, 2:55 PM
Time taken	15 mins 21 secs
Grade	**6.00** out of 10.00 (**60**%)

Question 1

Correct

Mark 2.00 out of 2.00

The subset $S = \{(1,2,3),(1,3,2),(3,2,1)\}$ of $\mathbb{R}^3$ is :

(I) linearly independent

(II) linearly dependent

(III) forms a basis of $\mathbb{R}^3$

(IV) spans the whole space of $\mathbb{R}^3$.

Choose the correct option.

Select one:

- a. (I) and (III) are true.
- b. Only (II) is true.
- c. (I), (III) and (IV) are true. ✓
- d. Only (I) is true.

Your answer is correct.

The correct answer is: (I), (III) and (IV) are true.

Question 2

Incorrect

Mark 0.00 out of 2.00

What is the dimension of the vector space formed by the solution of the system of linear equations?

$x + y + z = 0, x + y - 2z = 0, 2x + 2y - z = 0$

Select one:

a. 2

b. 3

c. 1

d. 0

Your answer is incorrect.

The correct answer is: 1

Question 3

Correct

Mark 2.00 out of 2.00

Choose the coordinate vector of $(1, 3)$ with respect to the ordered basis $\{(2, -1), (1, 2)\}$.

Select one:

a. $\left(\frac{5}{3}, -\frac{1}{3}\right)$

b. $\left(-\frac{1}{3}, \frac{5}{3}\right)$

c. $\left(\frac{1}{3}, \frac{5}{3}\right)$

d. $\left(\frac{5}{3}, \frac{1}{3}\right)$

Your answer is correct.

The correct answer is: $\left(-\frac{1}{3}, \frac{5}{3}\right)$

Question 4

Correct

Mark 2.00 out of 2.00

Let V be the vector space of all 2×2 matrices over $\mathbb{R}$. Consider the subspaces

$$U = \left\{ \begin{pmatrix} a & -a \\ -a & d \end{pmatrix} : a, d \in \mathbb{R} \right\} \text{ and } W = \left\{ \begin{pmatrix} a & b \\ -a & d \end{pmatrix} : a, b, d \in \mathbb{R} \right\}.$$

Then find the dimension of $U \cup W$.

Select one:

a. 2

b. 3

c. $U \cap W$ is not a vector space.

d. 1

Your answer is correct.

The correct answer is: 3

Question 5

Incorrect

Mark 0.00 out of 2.00

Let $S = \{(-1, 0, 1), (2, 1, 4)\}$. Then find the value of k for which the vector $(3k + 2, 3, 10)$ belongs to the linear span of S.

Select one:

a. -2

b. 3

c. 2

d. 10

Your answer is incorrect.

The correct answer is: 2