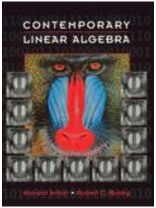
Chapter 7 , Section 2 of *Contemporary Linear Algebra* by Anton and Busby



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1. Let

$$\mathbf{v}_1 = (-1, 0, 3, 2), \mathbf{v}_2 = (1, 1, 1, 9), \mathbf{v}_3 = (4, -2, 4, 1),$$

$$\mathbf{v}_4 = (15, 6, 1, 4), \mathbf{v}_5 = (2, 5, 1, 4).$$

Which set is not linearly independent?

- A $\{v_2, v_3, v_4, v_5\}$
- B $\{\mathbf{v}_1, v_3, v_4, v_5\}$
- C $\{\mathbf{v}_1, v_2, v_4, v_5\}$
- D $\{\mathbf{v}_1, v_2, v_3, v_5\}$
- E $\{\mathbf{v}_1, v_2, v_3, v_4\}$

Next Question

2. Suppose the linear transformation $T : \mathbf{R}^3 \to \mathbf{R}^4$ satisfies $T(-1,1,0) = (4,2,-1,0)$, $T(1,0,1) = (1,2,5,-1)$, and $T(2,-1,2) = (0,1,-1,2)$. Find $T(3,-2,4)$.

- A $(2,1,-14,8)$
- B $(2,1,14,-8)$
- C $(2,-1,14,8)$
- D $(-2,1,-14,8)$
- E $(-2,1,14,-8)$

Next Question

3. If $\{\mathbf{u}_1, \mathbf{u}_2, \mathbf{u}_3\}$ and $\{\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3\}$ are any two bases of $\mathbf{R}^3$ then

A $\{\mathbf{u}_1, \mathbf{u}_2, \mathbf{u}_3, \mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3\}$ is a basis of $\mathbf{R}^3$

B at least one of the sets $\{\mathbf{u}_1, \mathbf{u}_2, \mathbf{w}_1\}$, $\{\mathbf{u}_1, \mathbf{u}_2, \mathbf{w}_2\}$, $\{\mathbf{u}_1, \mathbf{u}_2, \mathbf{w}_3\}$ is a basis of $\mathbf{R}^3$

C $\{\mathbf{u}_1, \mathbf{u}_2, \mathbf{u}_3\} \cap \{\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3\} \neq \emptyset$

D $\det(\mathbf{u}_1|\mathbf{u}_2|\mathbf{u}_3) = \det(\mathbf{w}_1|\mathbf{w}_2|\mathbf{w}_3)$

E $\{\mathbf{u}_1, \mathbf{u}_2, \mathbf{u}_3\} = \{\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3\}$

Next Question

4. Let $\mathbf{v}_1 = (2, -1, 1)$ and $\mathbf{v}_2 = (-1, 4, 3)$. Find the false statement.

- A $\{\mathbf{v}_1, \mathbf{v}_2, (1, 0, 0)\}$ is a basis for $\mathbf{R}^3$
- B $\mathbf{v}_1$ and $\mathbf{v}_2$ are linearly independent
- C $\dim(\text{span}\{\mathbf{v}_1, \mathbf{v}_2\}) = 2$
- D $\dim(\text{span}\{\mathbf{v}_1\}) = \dim(\text{span}\{\mathbf{v}_2\})$
- E $\{\mathbf{v}_1, \mathbf{v}_2, \mathbf{v}_1 + \mathbf{v}_2\}$ is a basis for $\mathbf{R}^3$.

Next Question

5. Let $W = \text{span}\{(4,-2,1,1),(2,2,-1,2),(7,3,3,-4)\}$. The solution space of $A\mathbf{x}=0$ is contained in W, where

A $A = \begin{pmatrix} 2 & 0 & 4 & 2 \\ 0 & 2 & 3 & 6 \end{pmatrix}$

B $A = \begin{pmatrix} 5 & 1 & 0 & 1 \\ 3 & -3 & 1 & 5 \end{pmatrix}$

C $A = \begin{pmatrix} 1 & 0 & -1 & 4 \\ 5 & -2 & 1 & 10 \end{pmatrix}$

D $A = \begin{pmatrix} 0 & 2 & 3 & -2 \\ -1 & 3 & 1 & 0 \end{pmatrix}$

E $A = \begin{pmatrix} 3 & -1 & 4 & 1 \\ 4 & -2 & 0 & -1 \end{pmatrix}$.

No more questions

RIGHT!

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Wrong...try again

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