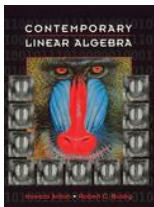


Chapter 7, Section 6 of *Contemporary Linear Algebra* by Anton and Busby



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Let

$$A = \begin{bmatrix} 1 & -2 & 4 & -1 \\ -2 & 4 & 3 & 1 \\ -4 & 8 & 17 & 1 \\ -1 & 2 & 0 & 2 \end{bmatrix}.$$

1. Find the pivot columns of A .

- A 1, 2, 3
- B 1, 2
- C 1, 2, 4
- D 1, 3
- E 1, 3, 4.

Next Question

2. Find the pivot columns of A^T .

- ▶ A 1, 2, 3
- ▶ B 1, 2
- ▶ C 1, 2, 4
- ▶ D 1, 3
- ▶ E 1, 3, 4

Next Question

3. Find B , given that the non-zero rows in the reduced row-echelon form of B are

$$\begin{bmatrix} 1 & 0 & -3 & 0 & 1 \\ 0 & 1 & 2 & -1 & -3 \end{bmatrix} \text{ and that } \begin{bmatrix} 2 & 3 \\ -3 & 1 \\ -2 & 1 \\ 1 & 1 \end{bmatrix}$$

are the first two columns of B .
See next page for answers

▶ A

$$\begin{bmatrix} 2 & 3 & 0 & -3 & 1 \\ -3 & 1 & 0 & 3 & -6 \\ -2 & 1 & 8 & -1 & 5 \\ 1 & 1 & -1 & 7 & -2 \end{bmatrix}$$

▶ B

$$\begin{bmatrix} 2 & 3 & 0 & -3 & -7 \\ -3 & 1 & 11 & -1 & -6 \\ -2 & 1 & 8 & -1 & -5 \\ 1 & 1 & -1 & -1 & -2 \end{bmatrix}$$

▶ C

$$\begin{bmatrix} 2 & 3 & 0 & -3 & 1 \\ -3 & 1 & 10 & -1 & -2 \\ -2 & 1 & 2 & -1 & 4 \\ 1 & 1 & -1 & -1 & -2 \end{bmatrix}$$

▶ D

$$\begin{bmatrix} 2 & 3 & 3 & -3 & -7 \\ -3 & 1 & -1 & 0 & -6 \\ -2 & 1 & 0 & -1 & -5 \\ 1 & 1 & -1 & 0 & -2 \end{bmatrix}$$

▶ E

$$\begin{bmatrix} 2 & 3 & 0 & 0 & 0 \\ -3 & 1 & 0 & -1 & 0 \\ -2 & 1 & 8 & 0 & 0 \\ 1 & 1 & 0 & -1 & 0 \end{bmatrix}$$

Next Question

4. Suppose E and F are square matrices. Then x is in both $\text{null}(E^T)$ and $\text{null}(F^T)$ if and only if

- ▶ A $x \in \text{null}(E^T + F^T)$
- ▶ B $x \in \text{null}([E|F]^T)$
- ▶ C $x \in \text{null}(EF^T)$
- ▶ D $x \in \text{null}([E^T|F^T])$
- ▶ E $x \in \text{null}((E - F)^T)$

Next Question

5. Suppose the row-reduced echelon form of $[D|I]$ is $\begin{bmatrix} X & Y \\ 0 & Z \end{bmatrix}$ in block form, where X has no zero row and $\begin{bmatrix} Y \\ Z \end{bmatrix}$ is square. Then

- ▶ A $\text{null}(D^T) = \text{row}(Z)$
- ▶ B $\text{null}(D^T) = \text{col}(Z)$
- ▶ C $\text{null}(D^T) = \text{null}(Z)$
- ▶ D $\text{null}(D^T) = \text{null}(Z^T)$
- ▶ E none of these.

No more questions



RIGHT!

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Wrong...try again

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