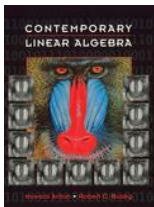Chapter 3 , Section 5 of *Contemporary Linear Algebra* by Anton and Busby

Questions 1 and 2 refer to the linear system

$$\begin{bmatrix} 1 & -3 & -2 & 3 \\ 2 & -6 & 1 & 4 \\ 1 & -3 & -7 & 5 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 3 \end{bmatrix}.$$

1. The vector **p** is a particular solution, where **p** is

▸ A $\begin{pmatrix} 2 \\ 0 \\ 1/5 \\ 0 \end{pmatrix}$ ▸ B $\begin{pmatrix} 1/5 \\ 0 \\ 2/5 \\ 0 \end{pmatrix}$

▸ C $\begin{pmatrix} -1 \\ 0 \\ 2 \\ 0 \end{pmatrix}$ ▸ D $\begin{pmatrix} 1/5 \\ 0 \\ -2/5 \\ 0 \end{pmatrix}$

▸ E $\begin{pmatrix} 1 \\ 0 \\ 2 \\ 0 \end{pmatrix}$

Next Question

2. The general solution of the associated homogeneous system is the span of

▸ A
$$\begin{pmatrix} 3 \\ 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} -11/5 \\ 0 \\ 2/5 \\ 1 \end{pmatrix}$$
▸ B
$$\begin{pmatrix} 1 \\ 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} -11 \\ 0 \\ 2 \\ 1 \end{pmatrix}$$

▸ C
$$\begin{pmatrix} -3 \\ 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 11/5 \\ 0 \\ 2/5 \\ 1 \end{pmatrix}$$
▸ D
$$\begin{pmatrix} -1 \\ 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 2/5 \\ 0 \\ -11/5 \\ 1 \end{pmatrix}$$

▸ E
$$\begin{pmatrix} 1 \\ 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 11/5 \\ 0 \\ -2/5 \\ 1 \end{pmatrix}$$

Next Question

3. Find the dimension of the solution space of

$$
\begin{array}{rrrrrl}
9x_1 & -3x_2 & +5x_3 & & +6x_4 & = & 0 \\
6x_1 & -2x_2 & +3x_3 & & +x_4 & = & 0 \\
3x_1 & & -x_2 & +3x_3 & +14x_4 & = & 0
\end{array}
$$

4. If **x**, **x'**, and **x** + **x'** are all solutions of $A\mathbf{x} = \mathbf{b}$ then

- A $\mathbf{x} = \mathbf{x'}$
- B $\mathbf{x} + \mathbf{x'} = 0$
- C $\mathbf{b} = 0$
- D A is invertible
- E A is not invertible.

Next Question

5. If $(17, 0, k, 3, -1) \in$
span$\{(1, 0, 1, 0, 1), (-1, 2, 1, 1, 1), (3, 1, -1, 1, 1)\}$ then k is

- A   -13
- B   -7
- C   -3
- D   -1
- E   0

No more questions

RIGHT!

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Wrong...try again

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