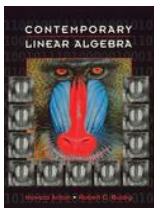Chapter 3, Section 6 of *Contemporary Linear Algebra* by Anton and Busby

Next Page

1. Find the set of values of x for which the matrix B is not invertible, where

$$B = \begin{pmatrix} x - 1 & 0 & 0 \\ x & x - 1/2 & 0 \\ 0 & x - 1/7 & x + 5 \end{pmatrix}.$$

- ▸A $\{-5, 1/2, 1\}$
- ▸B $\{0, 1/7\}$
- ▸C $\{-5, -1, -1/2\}$
- ▸D $\{-1/7, 0\}$
- ▸E $\{0\}$

Next Question

2. Find the false statement, where

$$G = \begin{pmatrix} 0 & 2 & 0 & -1 \\ 0 & 0 & 0 & 2 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -3 \end{pmatrix}.$$

- ▸A G is singular.
- ▸B GG^T and G^TG are not invertible.
- ▸C G is upper triangular.
- ▸D G is not symmetric.
- ▸E G^T is upper triangular.

Next Question

3. Let diag(d_1, d_2, d_3, d_4) denote the diagonal matrix with diagonal entries d_1, d_2, d_3, d_4 in that order. Find a matrix A satisfying $A^{-7} = \text{diag}(1, -128, 128, 1/128)$.

- (A) diag($1, -1/2, 1/2, 2$)
- (B) diag($1/7, -128/7, 128/7, 7/128$)
- (C) diag($1, -2, 2, 1/2$)
- (D) diag($1/7, -128/7, 128/7, 1/896$)
- (E) diag($-1/7, 128/7, -128/7, -1/896$)

Next Question

4. Find (a, b, c) given that

$$\begin{pmatrix} 0 & 2 & 2a - b + c \\ a + b - c & 0 & -5 \\ -5 & a - 2b + c & 0 \end{pmatrix}$$

is skew-symmetric.

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

Next Question

5. Find the set of fixed points of the matrix

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

- **A** $\{t(1, 0, -1)^T : t \in \mathbf{R}\}$
- **B** $\{t(0, 1, -1)^T : t \in \mathbf{R}\}$
- **C** $\{t(1, 0, 0)^T : t \in \mathbf{R}\}$
- **D** $\{t(1, -1, 0)^T : t \in \mathbf{R}\}$
- **E** $\{t(0, 0, 1/2)^T : t \in \mathbf{R}\}$

No more questions

RIGHT!

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Wrong...try again

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