DOM SEG TER QUA QUI SEX SÁB

Tarefa Básica

1 - $A = \begin{bmatrix} x & 1 \\ 5 & 3 \end{bmatrix}$ inversa $= \begin{bmatrix} 3 & -1 \\ -5 & x \end{bmatrix}$

$B = \begin{bmatrix} 3 & -1 \\ y & 2 \end{bmatrix}$ $\quad x = 2 \quad y = -5 \quad x + y = -3$ (c)

2 - $\begin{bmatrix} 1 & 0 & 1 \\ K & 1 & 3 \\ 1 & K & 3 \end{bmatrix} \begin{matrix} 1 \\ K \\ 1 \end{matrix} \begin{matrix} 0 \\ 1 \\ K \end{matrix}$ $\quad 3 + K^2 - 1 - 3K$

$K^2 - 3K + 2 = 0$

$\Delta = 9 - 8$

$\Delta = 1$

$K = \frac{3 \pm 1}{2} \begin{cases} x' = 2 \\ x'' = 1 \end{cases}$ (c)

3 - $\begin{bmatrix} 3 & 5 \\ 2 & 4 \end{bmatrix}$ $\quad \det = -2$ $\quad B = A^{-1} = \begin{bmatrix} 4 & -5 \\ -2 & 3 \end{bmatrix} \div 2$

$B = A^{-1} = \begin{bmatrix} 2 & -5/2 \\ -1 & 3/2 \end{bmatrix}$ (c)

4 - $\begin{bmatrix} x & 1 & 2 \\ 3 & 1 & 2 \\ 10 & 1 & x \end{bmatrix} \begin{matrix} x \\ 3 \\ 10 \end{matrix} \begin{matrix} 1 \\ 1 \\ 1 \end{matrix}$ $\quad x^2 + 2x - 20 - 5x$

$x^2 - 5x + 6 = 0$

$\Delta = 25 - 24$

$\Delta = 1$

$x = \frac{5 \pm 1}{2} \begin{cases} x' = 3 \\ x'' = 2 \end{cases}$ (A)

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5- $\left[\begin{array}{ccc|cc} -1 & -1 & 2 & -1 & -1 \\ 2 & 1 & -2 & 2 & 1 \\ 1 & 1 & -1 & 1 & 1 \end{array}\right]$ $D = 1$

$C_{ij} = \begin{bmatrix} 1 & 0 & 1 \\ 1 & -1 & 0 \\ 0 & 2 & 1 \end{bmatrix} \xrightarrow{t} \begin{bmatrix} 1 & 1 & 0 \\ 0 & -1 & 2 \\ 1 & 0 & 1 \end{bmatrix} + \begin{bmatrix} -1 & -1 & 2 \\ 2 & 1 & -2 \\ 1 & 1 & -1 \end{bmatrix} =$

$\begin{bmatrix} 0 & 0 & 2 \\ 2 & 0 & 0 \\ 2 & 1 & 0 \end{bmatrix}$ (B)

6- $(x \cdot A)^T = B \rightarrow xA \cdot A^{-1} = B^T A^{-1} \rightarrow X = B^t A^{-1}$

(B)

7- $\begin{bmatrix} 4 & 5 \\ 5 & 6 \end{bmatrix}$ $D = 1 \rightarrow \begin{bmatrix} 6 & -5 \\ -5 & 4 \end{bmatrix}$ $6y - 5y = 1$, $-5x + 4x = -1$

$\begin{bmatrix} 6y & -5y \\ -5x & 4x \end{bmatrix} \cdot 1 \rightarrow \begin{bmatrix} 6 & -5 \\ 5 & -4 \end{bmatrix} \cdot \begin{bmatrix} -1 \\ 1 \end{bmatrix}$ $\cdot -1$

$\begin{bmatrix} -6 & 5 \\ 5 & -4 \end{bmatrix}$ // (D)

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8- $\begin{bmatrix} 2 & K \\ -2 & 1 \end{bmatrix}$ $D = 2 + 2K$ $K = -2$ $\rightarrow$ $\begin{bmatrix} 2 & -2 \\ -2 & 1 \end{bmatrix}$ $D = 2 - 4$ $D = -2$

(B)

9-

a) $(A+B).(A-B) = A^2 - AB + AB - B^2$

b) $(A+B)^2 = A^2 + 2AB + B^2 \rightarrow AB = B.A$

c) $\frac{\det A}{\det -A} = 1$

d) $\det B = \frac{1}{\det A}$