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CP 1890964  
TURMA 348

$$I. \begin{bmatrix} x & 1 \\ 5 & 3 \end{bmatrix} \cdot \begin{bmatrix} 3 & -1 \\ x & 2 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \Rightarrow \begin{cases} 3x + y = -1 \\ -x + 2 = 0 \end{cases}$$

$$I. 3x + (-5) = 1$$

$$3x - 5 = 1$$

$$3x = 1 + 5$$

$$3x = 6$$

$$x = 6/3 \quad x = 2$$

$$II. x + 3y = 0$$

$$3y = -15$$

$$y = -15/3$$

$$y = -5$$

$$x + y$$

$$2 + (-5)$$

$$2 - 5 = -3 \quad (\text{LETRA C})$$

$$II. A = \begin{bmatrix} 1 & 0 & 1 \\ K & 1 & 3 \\ 1 & K & 3 \end{bmatrix} \begin{matrix} 1 + 3K & 0 = 3K + 1 \\ 1 & 0 \\ K & 1 \\ 1 & K \end{matrix} \left. \begin{matrix} K^2 - 3K + 2 = 0 \\ K^2 = K^2 + 3 \end{matrix} \right\}$$

$$\Delta = (-3)^2 - 4 \cdot 1 \cdot 2$$

$$\Delta = 9 - 8$$

$$\Delta = 1$$

$$x = \frac{-3 \pm \sqrt{1}}{2 \cdot 1} \Rightarrow \begin{cases} \frac{3+1}{2} = \frac{4}{2} = 2 \\ \frac{3-1}{2} = \frac{2}{2} = 1 \end{cases}$$

$$III. A = \begin{bmatrix} 3 & 5 \\ 2 & 4 \end{bmatrix} = 12 - 10 = 2$$

$$B = A^{-1} = \begin{bmatrix} 4 & -5 \\ -2 & 3 \end{bmatrix} \cdot \frac{1}{2}$$

$$B = \begin{bmatrix} 2 & -5/2 \\ -1 & 3/2 \end{bmatrix} = (\text{LETRA C})$$



$$IV - \left[ \begin{array}{ccc|cc} X & 1 & 2 & X & 1 \\ 3 & 1 & 2 & 3 & 1 \\ 10 & 1 & X & 10 & 1 \end{array} \right] \left. \begin{array}{l} 20 \quad 2X \quad 3X = 20+5X \\ X^2 \quad 20 \quad 6 = 26+X^2 \end{array} \right\} X^2 - 5X + 6 = 0$$

$$\Delta = (-5)^2 - 4 \cdot 1 \cdot 6$$

$$\Delta = 25 - 24$$

$$\Delta = 1$$

$$X = \frac{-5 \pm \sqrt{1}}{2 \cdot 1} \quad \left| \begin{array}{l} \frac{5+1}{2} = \frac{6}{2} = 3 \\ \frac{5-1}{2} = \frac{4}{2} = 2 \end{array} \right.$$

(Letra A)

$$V - A = \left[ \begin{array}{ccc|cc} -1 & -1 & 2 & 1 & 1 \\ 2 & 1 & -2 & 2 & 1 \\ 1 & 1 & -1 & 1 & 1 \end{array} \right] \left. \begin{array}{l} 2 \quad 2 \quad 2 = 6 \\ 1 \quad 2 \quad 4 = 7 \end{array} \right\} 7 - 6 = \boxed{1}$$

$$A^T = \begin{bmatrix} 1 & 0 & 1 \\ 1 & -1 & 0 \\ 0 & 2 & 1 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} 1 & 1 & 0 \\ 0 & -1 & 2 \\ 1 & 0 & 1 \end{bmatrix}$$

$$A = \begin{bmatrix} -1 & -1 & 2 \\ 2 & 1 & -2 \\ 1 & 1 & -1 \end{bmatrix}$$

$$\bar{A} = (A^T)^T = \begin{bmatrix} 1 & 1 & 0 \\ 0 & -1 & 2 \\ 1 & 0 & 1 \end{bmatrix}$$

$$A + A^{-1} = A = \begin{bmatrix} -1 & -1 & 2 \\ 2 & 1 & -2 \\ 1 & 1 & -1 \end{bmatrix} + A^{-1} = \begin{bmatrix} 1 & 1 & 0 \\ 0 & -1 & 2 \\ 1 & 0 & 1 \end{bmatrix}$$

$$A + A^{-1} = \begin{bmatrix} 0 & 0 & 2 \\ 2 & 0 & 0 \\ 2 & 1 & 0 \end{bmatrix} \quad (\text{Letra B})$$

$$V1 - ((XA)^T)^T = B^T \rightarrow XA = B^T$$

$$XAA^{-1} = B^T A^{-1} \rightarrow XI = B^T A^{-1}$$

$$\underbrace{X = B^T A^{-1}}_{\text{(LETRA } B)}$$



VII-  $A = 1$        $A \cdot B = C$        $C = \begin{bmatrix} 4x + 5y \\ 5x + 6y \end{bmatrix}$        $B = \begin{bmatrix} x \\ y \end{bmatrix}$   
 $A^{-1} = 1$        $A = C/B$

$$\begin{bmatrix} 4x/x + 5y/y \\ 5x/x + 6y/y \end{bmatrix} = \begin{bmatrix} 4 & 5 \\ 5 & 6 \end{bmatrix} = A \quad A^{-1} = \begin{bmatrix} -6 & 5 \\ 5 & -4 \end{bmatrix} \text{ (LETRA D)}$$

VIII-  $A = \begin{pmatrix} 2 & 1 \\ -2 & 1 \end{pmatrix}$        $A^{-1} = \begin{pmatrix} -1 & K \\ -2 & -2 \end{pmatrix}$        $K = -2$

$$\det A = 2 - 4 = \boxed{-2} \quad \det A^{-1} = 2 - 4 = \boxed{-2} \text{ (LETRA B)}$$



$$1X - \cancel{1} \quad (A+B) \cdot (A-B) = \boxed{A^2 - AB + BA - B^2}$$

$$B) (A+B)^2 = (A+B) \cdot (A+B) = A^2 + AB + BA - B^2$$

$$A^2 + AB + BA - B^2 = A^2 + 2AB + B^2$$

$$\boxed{AB = BA}$$

$$C) \det(-A) = (-1)^2 \cdot \det A = \det A \neq 0$$

$$\frac{\det(-A)}{\det A} = \frac{\det(A)}{\det(A)} = \boxed{1}$$

$$D) \det(AB) = 1 \quad \det B = \frac{1}{\det A}$$

$$\det(A) \cdot \det(B) = 1$$