



STQQS SD

VV

Nome: João Victor

Turma: CTII 348

Prontuário: 1990527

Tarefa básica.

1)

a) $\begin{bmatrix} 2 & 3 \\ 1 & 5 \end{bmatrix} \rightarrow (2 \cdot 5) - (1 \cdot 3) \rightarrow \underline{\det = 7}$

b) $\begin{bmatrix} -2 & -4 \\ 3 & 6 \end{bmatrix} \rightarrow (-2 \cdot 6) - (3 \cdot (-4)) \rightarrow \underline{\det = 0}$

c)
$$\begin{array}{|ccc|c|} \hline 3 & -1 & 11 & -12 \\ \hline 2 & 1 & -1 & 2 \\ \hline 1 & 4 & -2 & 1 \\ \hline & -6 & +1 & 8 \\ \hline \end{array} \rightarrow (-6 + (+1) + 8) - (1 + (-12) + 4) = \underline{\det = 10}$$

d)
$$\begin{array}{|ccc|c|} \hline 3 & 2 & -1 & -3 \\ \hline 2 & 3 & 1 & 3 \\ \hline 1 & 1 & 4 & 2 \\ \hline & 36 & +2 & +(-2) \\ \hline \end{array} \rightarrow (36 + 2 + (-2)) - (-3 + 3 + 16) = \underline{\det = 20}$$

2)

$$A_{ij} = \begin{cases} -3, & \text{se } i=j \\ 0, & \text{se } i \neq j \end{cases}$$

$$A = \begin{bmatrix} A_{11} & A_{12} & A_{13} \\ A_{21} & A_{22} & A_{23} \\ A_{31} & A_{32} & A_{33} \end{bmatrix} \rightarrow A = \begin{bmatrix} -3 & 0 & 0 \\ 0 & -3 & 0 \\ 0 & 0 & -3 \end{bmatrix}$$



$$A = \begin{vmatrix} -27 & 0 & 0 \\ -3 & 0 & 0 \\ 0 & -3 & 0 \\ 0 & 0 & -3 \\ 0 & 0 & 0 \\ -27 & 0 & 0 \end{vmatrix} \rightarrow (-27+0+0) - (0+0+0)$$

$\det = -27$

(A)

3) $x^2 + 12x + 9$

$$\begin{array}{|ccc|cc|} \hline x & 1 & x & x & 1 \\ \hline 3 & x & 4 & 3 & x \\ 1 & 3 & 3 & 1 & 3 \\ \hline 3x^2 + 4x + 9x \end{array} = -3$$

$$S = \left\{ -\frac{1}{2}; 2 \right\}$$

(E)

$$\begin{cases} 3x^2 + 4x + 9x - (x^2 + 12x + 9) = -3 \\ 3x^2 + 4x + 9x - x^2 - 12x - 9 = -3 \\ 2x^2 - 3x - 5 = -3 \\ 2x^2 - 3x - 5 + 3 = 0 \\ 2x^2 - 3x - 2 = 0 \end{cases}$$

$$x' = \underline{3+5} = 2$$

$$\Delta = 9 + 16$$

$$\Delta = 25$$

$$\Delta = b^2 - 4AC$$

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

$$x = \frac{-b \pm \sqrt{\Delta}}{2A}$$

$$x'' = \frac{3-5}{4} = \underline{\frac{-1}{2}}$$

4)

$$\begin{array}{|ccc|cc|} \hline x-1 & -1 & 0 & x-1 & -1 \\ \hline 0 & x+1 & -1 & 0 & x+1 \\ 2 & -1 & x+1 & 2 & -1 \\ \hline \end{array} = 2$$

$$\begin{aligned} (x-1) \cdot (x+1) \cdot (x+1) + 2 + 0 - (2 \cdot (x+1) + (x-1) + 0) &= 2 \\ (x-1) \cdot (x^2 + 2x + 1) + 2 - (2x + 2 + x-1) &= 2 \\ (x^3 + 2x^2 + x - x^2 - 2x - 1) + 2 - (3x + 1) &= 2 \end{aligned}$$



STQQS SD

/ /

$$(x^3 + 2x^2 + x - x^2 - 2x - 1) + 2 - (3x + 1) = 2$$

$$x^3 + x^2 - x - 1 + 2 - 3x - 1 = 2$$

$$x^3 + x^2 - 4x = 2$$

$$\frac{x^3}{a} + \frac{x^2}{b} - \frac{4x}{c} - 2 = 0$$

(C)

$$\frac{-b}{a} = \frac{-1}{1} = -1$$

$$5) A_{1j} = 2_1 - 3j$$

$$A = \begin{bmatrix} A_{11} & A_{12} \\ A_{21} & A_{22} \\ A_{31} & A_{32} \end{bmatrix} \rightarrow A = \begin{bmatrix} -1 & -4 \\ 1 & -2 \\ 3 & 0 \end{bmatrix}$$

$$B = \begin{bmatrix} B_{11} & B_{12} & B_{13} \\ B_{21} & B_{22} & B_{23} \end{bmatrix} \rightarrow B = \begin{bmatrix} 0 & 1 & 2 \\ -1 & 0 & 1 \end{bmatrix}$$

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

$$\begin{bmatrix} -1 & -4 \\ 1 & -2 \\ 3 & 0 \end{bmatrix} \begin{bmatrix} 0+4 & -1+0 & -2-4 \\ 0+2 & 1+0 & 2-2 \\ 0+0 & 3+0 & 6+0 \end{bmatrix} \rightarrow A \cdot B = \begin{bmatrix} 4 & -1 & -6 \\ 2 & 1 & 0 \\ 0 & 3 & 6 \end{bmatrix}$$

$$A \cdot B = \begin{bmatrix} 4 & -1 & -6 \\ 2 & 1 & 0 \\ 0 & 3 & 6 \end{bmatrix} \begin{bmatrix} 4 & 0 & -12 \\ 2 & 1 & - \end{bmatrix} \rightarrow (24 + 0 + (-36)) - (-12 + 0 + 0)$$

$$24 + 0 + (-36)$$

$$\det A \cdot B = 0$$

(C)

spiral®

LOVE
PARIS
SAINT-GERMAIN
PARIS SAINT-GERMAIN

/ /

6)

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

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

$$\begin{bmatrix} 2 & 0 & -1 \\ -1 & 1 & 0 \end{bmatrix} \quad \begin{bmatrix} 2+0+0 & -2+0-2 \\ -1-1+0 & 1+1+0 \end{bmatrix}$$

$$A \cdot B = \begin{bmatrix} 2 & -4 \\ -2 & 2 \end{bmatrix} \rightarrow 2 \cdot 2 - (-2 \cdot -4) \quad 4$$

$$\det = -4$$

(D)