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Turma: CTII 348

$$Q1. \begin{array}{c|cc} x & 2 & 3 \\ \hline a) & 1 & 5 \end{array} \quad (2 \cdot 5) - (3 \cdot 1) = 10 - 3 = 7$$

$$b) \begin{array}{c|cc} & -2 & -4 \\ \hline & 3 & 6 \end{array} \quad -2 \cdot 6 - -4 \cdot 3 = 12 - 12 = 0$$

$$c) \begin{array}{c|ccc} & 3 & -1 & -1 \\ \hline & 2 & 1 & -1 \\ & 1 & 4 & -2 \end{array} \begin{array}{c|c} 3 & -1 \\ \hline 2 & 1 \\ 1 & 4 \end{array} \quad \begin{array}{l} (-6 + 1 + 8) - (1 + -12 + 4) \\ 3 - -7 = 10 \end{array}$$

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

$$Q2. \begin{array}{c|ccc} & -3 & 0 & 0 \\ \hline & 0 & -3 & 0 \\ A = & 0 & 0 & -3 \end{array} \begin{array}{c|c} -3 & 0 \\ \hline 0 & -3 \\ 0 & 0 \end{array} \quad \begin{array}{l} (-27 + 0 + 0) - (0 + 0 + 0) \\ -27 - 0 = -27 \quad (A) \end{array}$$

$$03. \begin{vmatrix} x & 1 & x \\ 3 & x & 4 \\ 1 & 3 & 3 \end{vmatrix} = -3$$

$$\begin{vmatrix} x & 1 & x \\ 3 & x & 4 \end{vmatrix}$$

$$(3x^2 + 3x + 4) - (x^2 + 12x + 3) = -3$$

$$2x^2 - 3x - 5 = -3$$

$$2x^2 - 3x - 2 = 0$$

$$x_1 = \frac{2}{4}$$

$$\frac{-(-3) \pm \sqrt{25}}{2 \cdot 2} = \frac{3 \pm 5}{4}$$

$$x_2 = \frac{8}{4}$$

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

$$\Delta = 9 + 16 = 25$$

$$x_1 = \frac{1}{2} \quad x_2 = 2 \quad (E)$$

$$04. \begin{vmatrix} x-1 & -1 & 0 \\ 0 & x+1 & -1 \\ 2 & -1 & x+1 \end{vmatrix} = 2$$

$$\begin{vmatrix} x-1 & -1 & 0 \\ 0 & x+1 & -1 \end{vmatrix}$$

$$x-1 \cdot x+1 = x^2 + x - x - 1 = x^2 - 1$$

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

$$\rightarrow (x^3 + x^2 - x + 1) + 0 + 2 - (0 + x - 1 + 0)$$

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

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

Utilizando das relações de Girard sabemos que:

$$x_1 + x_2 + x_3 = -b/a$$

$$-b/a = -1/1 = -1 \quad (C)$$



Q5.

$$A = \begin{bmatrix} -1 & -4 \\ 1 & -2 \\ 3 & 0 \end{bmatrix}$$

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

$$AB = \begin{bmatrix} 4 & -1 & -6 \\ 2 & 1 & 0 \\ 0 & 3 & 6 \end{bmatrix}$$

$$\begin{vmatrix} 4 & -1 & -6 \\ 2 & 1 & 0 \\ 0 & 3 & 6 \end{vmatrix} = (24 - 36 + 0) - (0 + 0 - 12)$$

$$= 24 - 36 + 12$$

$$36 - 36 = 0 \quad (C)$$

$$4 \quad -1 \quad -6$$

$$2 \quad 1 \quad 0$$

Q6.

$$AB = \begin{bmatrix} 2 & -4 \\ -2 & 2 \end{bmatrix}$$

$$\rightarrow \begin{vmatrix} 2 & -4 \\ -2 & 2 \end{vmatrix} = 2 \cdot 2 - (-4 \cdot -2) = 4 - 8 = -4$$

(D)