Beatriz Gonçalves Eleutério

1- a) $\begin{bmatrix} 2 & 3 \\ 1 & 5 \end{bmatrix}$ $\begin{matrix} 3 \\ 10 \end{matrix}$ $10 - 3 = 7$

b) $\begin{bmatrix} -2 & -4 \\ 3 & 6 \end{bmatrix}$ $\begin{matrix} -12 \\ -12 \end{matrix}$ $-12 - (-12) = 0$

c) $\begin{bmatrix} 3 & -1 & 1 \\ 2 & 1 & -1 \\ 1 & 4 & -2 \end{bmatrix}$ $\begin{matrix} 1 \\ -12 \\ 4 \\ 8 \\ -1 \\ -6 \end{matrix}$ $\begin{matrix} 3 & -1 \\ 2 & 1 \\ 1 & 4 \end{matrix}$ $(-6 + 1 + 8) - (1 + (-12) + 4) \Rightarrow 3 - (-7) = 10$

d) $\begin{bmatrix} 3 & 2 & -1 \\ 2 & 3 & 1 \\ 1 & 1 & 4 \end{bmatrix}$ $\begin{matrix} -3 \\ 3 \\ 16 \\ -2 \\ 2 \\ 36 \end{matrix}$ $\begin{matrix} 3 & 2 \\ 2 & 3 \\ 1 & 1 \end{matrix}$ $(-2 + 2 + 36) - (-3 + 3 - 16) =$

$36 - 16 = 20$

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

$\begin{bmatrix} -3 & 0 & 0 \\ 0 & -3 & 0 \\ 0 & 0 & -3 \end{bmatrix}$ $\begin{matrix} 0 \\ 0 \\ -27 \end{matrix}$ $\begin{matrix} 0 & 0 \\ -3 & 0 \\ 0 & -3 \\ 0 & 0 \end{matrix}$ $-27 - 0 = -27$

Letra (A)

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

$x^2 + 12x + 9 - 9x - 4 - 3x^2$

$(3x^2+9x+4)-(x^2+12x+9) =$

$2x^2 - 3x - 5$

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

$\Delta = (-3)^2 - 4.2.(-5)$

$\Delta = 9 + 16$

$\Delta = 25$

$x = \frac{3 \pm \sqrt{25}}{2.2}$

$x = \frac{3 \pm 5}{4}$

$x' = \frac{3+5}{4} = \frac{8}{4} = 2$

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

Letra (E)

4) $\begin{vmatrix} x-1 & -1 & 0 \\ 0 & x+1 & -1 \\ 2 & -1 & x+1 \end{vmatrix}$ $\begin{matrix} x-1 & -1 \\ 0 & x+1 \\ 2 & -1 \end{matrix}$

$-0 \quad x-1 \quad 0 \quad 2 \quad -0 \quad 2$

$-x^3 - 1$

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

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

$(x-1).(x^2+2) = 0$

$x.(x-1).(x+2) = 0$

$x = 0$

$x = 1$

$x = \frac{-2}{-1}$

Letra (C)

5) $A = (a_{ij})_{3+2}$

$a_{ij} = 2i - 3j$

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

$B = (b_{jk})_{2\times 3}$

$b_{jk} = k - j$

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

$a_{11} = 2.1 - 3.1 = -1$

$a_{12} = 2.1 - 3.2 = -4$

$a_{21} = 2.2 - 3.1 = 1$

$a_{22} = 2.2 - 3.2 = -2$

$a_{31} = 2.3 - 3.1 = 3$

$a_{32} = 2.3 - 3.2 = 0$

$b_{11} = 1 - 1 = 0$

$b_{12} = 1 - 2 = -1$

$b_{21} = 2 - 1 = 1$

$b_{22} = 2 - 2 = 0$

$b_{31} = 3 - 1 = 2$

$b_{32} = 3 - 2 = 1$

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

0, -24, 0, -24, 0

$-24 - (-24) = 0$ Letra (C)

6) $$\begin{bmatrix} 1 & -1 \\ -1 & 1 \\ 0 & 2 \end{bmatrix} \begin{bmatrix} 2 & 0 & -1 \\ -1 & 1 & 0 \end{bmatrix} \quad \begin{bmatrix} 2 & -4 \\ -2 & 2 \end{bmatrix}$$

-8, 4

$4 - (8) = -4$

Letra (D)