TAREFA: DETERMINANTES

01.

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

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

c)

$$\left[\begin{array}{ccc|cc} 3 & -1 & 1 & 3 & -1 \\ 2 & 1 & -1 & 2 & 1 \\ 1 & 4 & -2 & 1 & 4 \end{array}\right]$$

$\rightarrow 1 + (12) + 4 = 7$

$\rightarrow -6 + 1 + 8 = 3$

$\rightarrow 3 + 7 = 10$

d)

$$\left[\begin{array}{ccc|cc} 3 & 2 & -1 & 3 & 2 \\ 2 & 3 & 1 & 2 & 3 \\ 1 & 1 & 4 & 1 & 1 \end{array}\right]$$

$\rightarrow -3 + 3 + 16 = 16$

$\rightarrow 36 + 2 - 2 = 36$

$36 - 16 = 20$

02.

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} = \left[\begin{array}{ccc|cc} -3 & 0 & 0 & -3 & 0 \\ 0 & -3 & 0 & 0 & -3 \\ 0 & 0 & -3 & 0 & 0 \end{array}\right]$$

$\rightarrow 0$

$\rightarrow -27$

DET $A = -27 - 0 = -27$

A

03.

$$\begin{bmatrix} \cancel{x} & 1 & x \\ 3 & x & 4 \\ 1 & 3 & 3 \end{bmatrix} = 3$$

$\rightarrow x^2 + 12x + 9$

$$\left[\begin{array}{ccc|cc} x & 1 & x & x & 1 \\ 3 & x & 4 & 3 & x \\ 1 & 3 & 3 & 1 & 3 \end{array}\right] \rightarrow 3x^2 + 4 + 9x - (x^2 + 12x + 9)$$

$\rightarrow 3x^2 + 4 + 9x$

$$3x^2 + 4 + 9x - (x^2 + 12x + 9)$$
$$3x^2 + 4 + 9x - x^2 - 12x - 9 = -3$$
$$2x^2 - 3x - 5 = -3$$
$$2x^2 - 3x - 2$$

$a: 2x^2$

$b: -3x$

$c: -2$

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

$\Delta = 9 + 16$

$\Delta = \sqrt{25}$

$\Delta = 5$

$\dfrac{3 \pm 5}{4} = \dfrac{8}{4} = 2$

$\dfrac{-2}{4} = \dfrac{1}{2}$

$\{1/2 \, ; \, 2\}$

E

FORONI

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

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

$\rightarrow 2(x+1).0 = 0$

$\rightarrow (x+1).(-1).(-1) \rightarrow x+1.(-1) = x-1$

$\rightarrow 0.(-1).(x+1) = 0$

$\rightarrow (x-1).(x+1).(x+1)$

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

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

$\begin{matrix} x-1 & -1 & 0 \\ 0 & x-1 & -1 \end{matrix}$

$\rightarrow 0.(-1).0 = 0$

$\rightarrow 2.(-1).(-1) = 2$

PRIMÁRIA:

$x^3 + x^2 - x - 1 + 0 + 2$

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

SECUNDÁRIA:

$0 + x - 1 + 0$

$x - 1$

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

$x^3 + x^2 - x + 1 - x + 1 - 2 = 0$

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

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

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

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

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

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

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

$x = 0 \qquad x = 0$

$x + 2 = 0 \qquad x = -2$

$x - 1 = 0 \qquad x = 1$

$x_1 : -2 \qquad -2 + 0 + 1$

$x_2 : 0 \qquad -1_{//}$ ⓒ

$x_3 : 1$

05.

$A = (A_{ij})_{3\times2}$; $A_{ij} = 2i - 3j$

$B = (B_{jk})_{2\times3}$; $B_{jk} = K - J$

$$A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \end{bmatrix} = \begin{bmatrix} 2.1 - 3.1 & 2.1 - 3.2 \\ 2.2 - 3.1 & 2.2 - 3.2 \\ 2.3 - 3.1 & 2.3 - 3.2 \end{bmatrix}$$

$$B = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \end{bmatrix} = \begin{bmatrix} 1-1 & 2-1 & 3-1 \\ 1-2 & 2-2 & 3-2 \end{bmatrix}$$

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

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

$0+0-12 = -12$

$$AB = \begin{bmatrix} 4 & -1 & -6 \\ 2 & 1 & 0 \\ 0 & 3 & 6 \end{bmatrix} \begin{matrix} 4 & -1 \\ 2 & 1 \\ 0 & 3 \end{matrix} \rightarrow -12 - 12 = 0$$

$24+0-36 = -12$

DET $A.B = 0$

C

06.

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

$$A.B = \begin{bmatrix} 2+0+0 & -2+0-2 \\ -1-1+0 & 1+1+0 \end{bmatrix} = \begin{bmatrix} 2 & -4 \\ -2 & 2 \end{bmatrix}$$

$$\text{DET } A.B = \begin{bmatrix} 2 & -4 \\ -2 & 2 \end{bmatrix} \begin{matrix} \to 8 \\ \to 4 \end{matrix} \to 4 - 8 = -4$$

$$\text{DET } A.B = -4$$

D