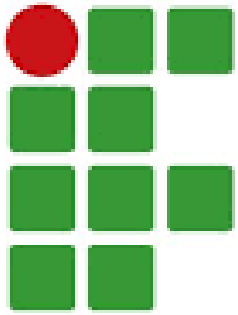

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SALA: 317

MATEMATICA

SEMANA 3

Determinante = D.P - D.S

① a) $\begin{bmatrix} 2 & 3 \\ 1 & 5 \end{bmatrix}$ = 2.5 - 3.1
10 - 3
7

b) $\begin{bmatrix} (-2) & (-4) \\ 3 & 6 \end{bmatrix}$ = -2.6 - (-4).3
-12 + 12
0

c) $\begin{bmatrix} 3 & (-1) & 1 \\ 2 & 1 & (-1) \\ 1 & 4 & (-2) \end{bmatrix}$ $\begin{matrix} 3 & -1 \\ 2 & 1 \\ 1 & 4 \end{matrix}$

D.S = 1 - 1 2 + 4 = -7
D.P = -6 + 1 + 8 = 3

Determinante = 3 + (-7)
10

d) $\begin{bmatrix} 3 & 2 & -1 \\ 2 & 3 & 1 \\ 1 & 1 & 4 \end{bmatrix}$ $\begin{matrix} 3 & 2 \\ 2 & 3 \\ 1 & 1 \end{matrix}$

D.P = 36 + 2 - 2 = 36
D.S = -3 + 3 + 16 = 16

Determinante = 36 - 16
20

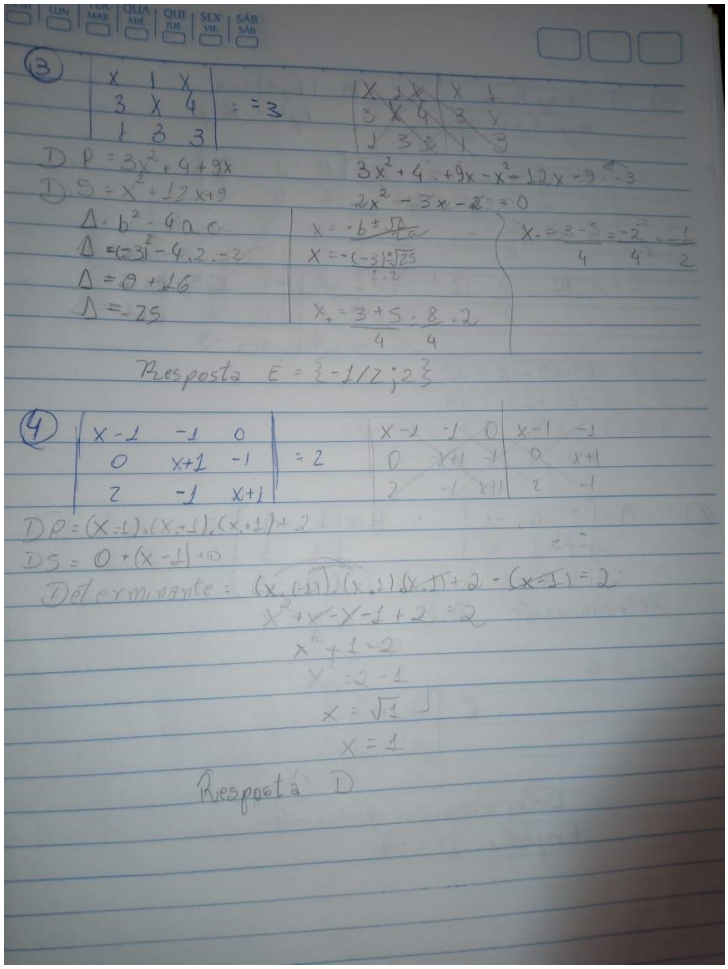
② $a_{ij} = \begin{cases} -3, \text{ se } i = j \\ 0, \text{ se } i \neq j \end{cases}$

$A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$

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

D.P = -27 + 0 + 0
D.S = 0 + 0 + 0

Determinante = -27
Resposta: A



③

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

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

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

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

D P = $3x^2 + 4 + 9x$

D S = $x^2 + 12x + 9$

$\Delta = b^2 - 4ac$

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

$\Delta = 9 + 16$

$\Delta = 25$

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

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

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

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

Resposta $E = \{-1/2; 2\}$

④

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

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

D P = $(x-1) \cdot (x+1) \cdot (x+1) + 2$

D S = $0 + (x-1) + 0$

Determinante = $(x-1) \cdot (x+1) \cdot (x+1) + 2 - (x-1) = 2$

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

$x^2 + 1 = 2$

$x^2 = 2 - 1$

$x = \sqrt{1}$

$x = 1$

Resposta D

⑤ $A = (a_{ij})_{2\times 2}$ $\quad a_{ij} = 2i - 3j$ $\quad B = (b_{jk})_{2\times 3}$ $\quad b_{jk} = k - j$

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

$C = A.B$

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

DP = -24 + 0 + 36 = 12

DS = 0 + 12 + 12 = 24

Determinante = 12 - 24 = -12

Resposta A = -12

⑥ $A = \begin{bmatrix} 2 & 0 & -1 \\ -1 & 1 & 0 \end{bmatrix}$ $\qquad B = \begin{bmatrix} 1 & -1 \\ -1 & 1 \\ 0 & 2 \end{bmatrix}$

Determinante A.B

$C = A.B$

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

Determinante = 4 - 8 = -4

Resposta D = -4