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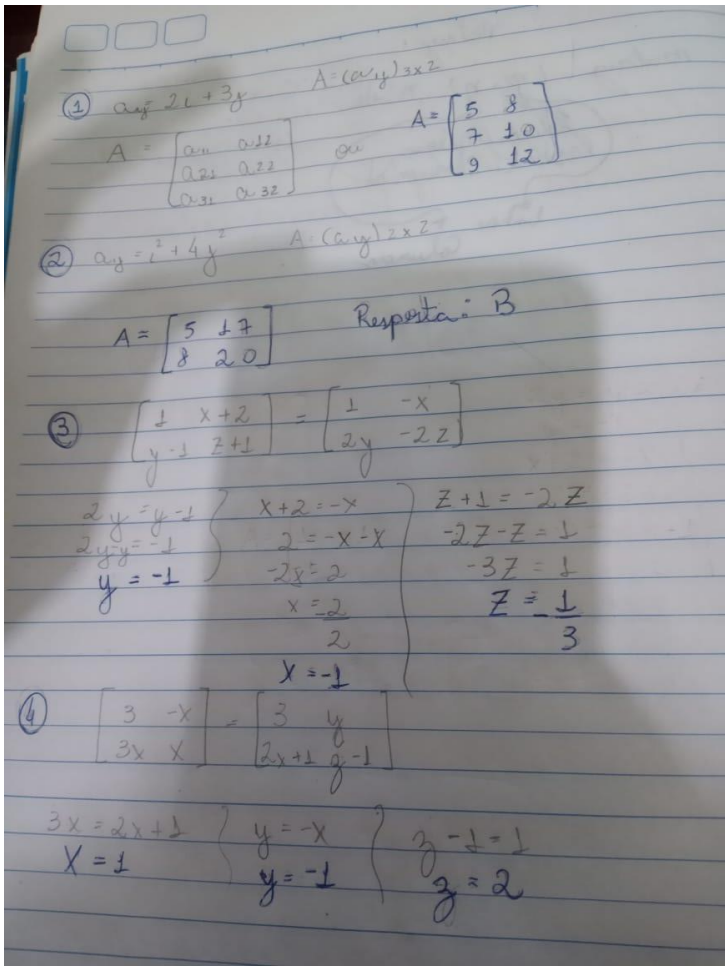
SALA: 317

MATEMATICA

MATRIZES EXERCÍCIO 06/05/2021



① $a_{ij} = 2i + 3j$ $\quad A = (a_{ij})_{3\times 2}$

$$A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \end{bmatrix} \quad \text{ou} \quad A = \begin{bmatrix} 5 & 8 \\ 7 & 10 \\ 9 & 12 \end{bmatrix}$$

② $a_{ij} = i^2 + 4j^2$ $\quad A = (a_{ij})_{2\times 2}$

$$A = \begin{bmatrix} 5 & 17 \\ 8 & 20 \end{bmatrix}$$

Resposta: B

③
$$\begin{bmatrix} 1 & x+2 \\ y-1 & z+1 \end{bmatrix} = \begin{bmatrix} 1 & -x \\ 2y & -2z \end{bmatrix}$$

$2y = y - 1$
$2y - y = -1$
$y = -1$

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

$z + 1 = -2z$
$-2z - z = 1$
$-3z = 1$
$z = -\frac{1}{3}$

④
$$\begin{bmatrix} 3 & -x \\ 3x & x \end{bmatrix} = \begin{bmatrix} 3 & y \\ 2x+1 & z-1 \end{bmatrix}$$

$3x = 2x + 1$
$x = 1$

$y = -x$
$y = -1$

$z - 1 = 1$
$z = 2$

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(5)

a_{ij} = dist i e j

4×4

$$A = \begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ a_{41} & a_{42} & a_{43} & a_{44} \end{bmatrix}$$

$$A = \begin{bmatrix} 0 & 1 & \sqrt{2} & 1 \\ 1 & 0 & 1 & \sqrt{2} \\ \sqrt{2} & 1 & 0 & 1 \\ 1 & \sqrt{2} & 1 & 0 \end{bmatrix}$$

Resposta = B

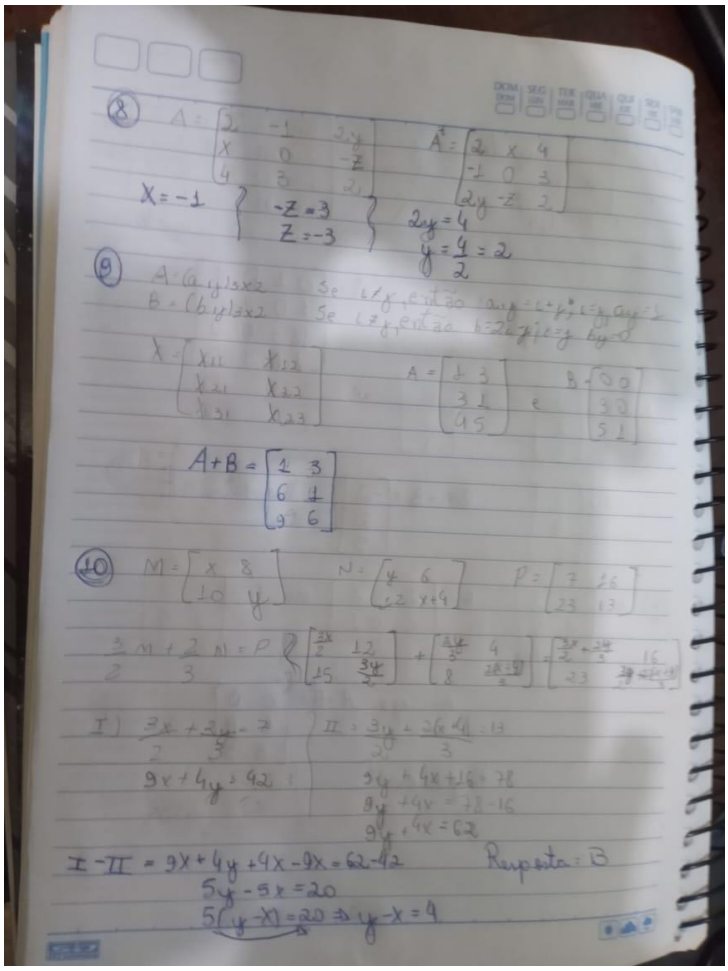
(6) $A = \begin{bmatrix} -1 \\ 2 \\ 3 \end{bmatrix}$ $B = \begin{bmatrix} 0 \\ -2 \\ 1 \end{bmatrix}$

$2A = \begin{bmatrix} -2 \\ 4 \\ 6 \end{bmatrix}$ $2A - B = \begin{bmatrix} -2 \\ 2 \\ 5 \end{bmatrix}$ Resposta = E

(7) $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$ $B = \begin{bmatrix} -1 & 3 & 2 \\ 2 & 0 & 1 \end{bmatrix}$ ou $B^t = \begin{bmatrix} -1 & 2 \\ 3 & 0 \\ 2 & 1 \end{bmatrix}$

ou seja $A - B^t = \begin{bmatrix} 0 & 0 \\ 0 & 4 \\ 3 & 5 \end{bmatrix}$

Resposta = E



(8) $A = \begin{bmatrix} 2 & -1 & 2y \\ x & 0 & -z \\ 4 & 3 & 2 \end{bmatrix}$ $\quad A^t = \begin{bmatrix} 2 & x & 4 \\ -1 & 0 & 3 \\ 2y & -z & 2 \end{bmatrix}$

$x = -1$ $\quad -z = 3 \quad z = -3$ $\quad 2y = 4 \quad y = \frac{4}{2} = 2$

(9) $A = (a_{ij})_{3\times 2}$ Se $i \neq j$, então $a_{ij} = i + j$; se $i = j$, $a_{ij} = 2$

$B = (b_{ij})_{3\times 2}$ Se $i \neq j$, então $b_{ij} = 2i + j$; se $i = j$, $b_{ij} = 0$

$X = \begin{bmatrix} x_{11} & x_{12} \\ x_{21} & x_{22} \\ x_{31} & x_{32} \end{bmatrix}$ $\quad A = \begin{bmatrix} 2 & 3 \\ 3 & 2 \\ 4 & 5 \end{bmatrix}$ e $B = \begin{bmatrix} 0 & 0 \\ 3 & 0 \\ 5 & 2 \end{bmatrix}$

$A + B = \begin{bmatrix} 2 & 3 \\ 6 & 2 \\ 9 & 6 \end{bmatrix}$

(10) $M = \begin{bmatrix} x & 8 \\ 10 & y \end{bmatrix}$ $\quad N = \begin{bmatrix} 4 & 6 \\ 12 & x+4 \end{bmatrix}$ $\quad P = \begin{bmatrix} 7 & 26 \\ 23 & 17 \end{bmatrix}$

$\frac{3}{2}M + \frac{2}{3}N = P \Rightarrow \begin{bmatrix} \frac{3x}{2} & 12 \\ 15 & \frac{3y}{2} \end{bmatrix} + \begin{bmatrix} \frac{3y}{2} & 4 \\ 8 & \frac{2x+8}{3} \end{bmatrix} = \begin{bmatrix} \frac{3x+3y}{2} & 16 \\ 23 & \frac{3y+2x+8}{3} \end{bmatrix}$

I) $\frac{3x}{2} + \frac{3y}{2} = 7$

$9x + 4y = 42$

II) $\frac{3y}{2} + \frac{2x+8}{3} = 17$

$9y + 4x + 16 = 78$

$9y + 4x = 78 - 16$

$9y + 4x = 62$

I − II $= 9x + 4y + 4x - 9x = 62 - 42$ $\quad$ Resposta: B

$5y - 5x = 20$

$5(y - x) = 20 \Rightarrow y - x = 4$