

## Julio Brandasse de Abreu Lima

### Lista de Exercícios 06/5/21 – Matrizes.

05/05/2021

Lista 1 para o dia 6/05

Ex 1.  $a_{ij} = 2i + 3j$

$A = (a_{ij})_{3 \times 2}$

$R: \begin{Bmatrix} 5 & 8 \\ 7 & 10 \\ 9 & 12 \end{Bmatrix}$

$a_{12} = 2 \cdot 1 + 3 \cdot 2 = 2 + 6 = 8$

$a_{21} = 2 \cdot 2 + 3 \cdot 1 = 4 + 3 = 7$

$a_{22} = 2 \cdot 2 + 3 \cdot 2 = 4 + 6 = 10$

$a_{31} = 2 \cdot 3 + 3 \cdot 1 = 6 + 3 = 9$

$a_{32} = 2 \cdot 3 + 3 \cdot 2 = 6 + 6 = 12$

2)  $A = (a_{ij})_{2 \times 2}$

$a_{ij} = i^2 + 4j^2$

$\begin{Bmatrix} 5 & 17 \\ 8 & 20 \end{Bmatrix}$

Alternativa A

$a_{11} = 1^2 + 4 = 5_{11}$

$a_{12} = 1 + 16 = 17_{11}$

$a_{21} = 4 + 4 = 8_{11}$

$a_{22} = 4 + 16 = 20_{11}$

3.

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

$A = B$   
 $a^{12} = a^{12}$   
 $x+2 = -x$   
 $2 = -2x$   
 $x = \frac{2}{-2} \rightarrow -1$

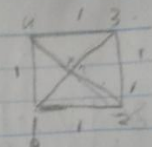
$y-1 = 2y$   
 $-1 = y$   
 $y = -1$   
 $z+1 = -2z$   
 $+1 = -2z-2$   
 $+1 = -3z$   
 $\frac{+1}{-3} = z$

4.

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

5)

$a_{11}$	$a_{12}$	$a_{13}$	$a_{14}$
0	1	$\sqrt{2}$	1
$\frac{1}{\sqrt{2}}$	0	1	$\frac{1}{\sqrt{2}}$
$\frac{1}{\sqrt{2}}$	1	0	1
1	$\sqrt{2}$	1	0



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

$$x^2 = 2$$

$$x = \sqrt{2}$$

6) ✓

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

Alternativa D)

$$2A - B = \begin{bmatrix} -2 \\ 4 \\ 6 \end{bmatrix} - \begin{bmatrix} 0 \\ -2 \\ 1 \end{bmatrix} = \begin{bmatrix} -2 \\ 6 \\ 5 \end{bmatrix}$$

$$2A - B = \begin{bmatrix} -2 \\ 4 \\ 6 \end{bmatrix} - \begin{bmatrix} 0 \\ -2 \\ 1 \end{bmatrix} = \begin{bmatrix} -2 \\ 6 \\ 5 \end{bmatrix}$$

7)  $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$   $B = \begin{bmatrix} -1 & 3 & 2 \\ 2 & 0 & 1 \end{bmatrix}$  R: Alternativa B)

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} - \begin{bmatrix} -1 & 2 \\ 3 & 0 \\ 2 & 1 \end{bmatrix} = \begin{bmatrix} 2 & 0 \\ 0 & 4 \\ 3 & 5 \end{bmatrix}$$

tilibra



$$8- \begin{bmatrix} 2 & -1 & 2y \\ x & 0 & -2 \\ 4 & 3 & 2 \end{bmatrix} = \begin{bmatrix} 2 & x & 4 \\ -1 & 0 & 3 \\ 2y & -2 & 2 \end{bmatrix}$$

$$\begin{aligned} x &= -1 \\ 2y &= 4 \\ y &= 4/2 = 2 \end{aligned}$$

$$\begin{aligned} 4z &= 3 \quad (-1) \\ z &= -3/4 \end{aligned}$$

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

**A** -2 ✓

A) -2 B) 1 C) 1 D) 3 E) 5

$$9- \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 4 & 5 \end{bmatrix}$$

9- A  $a=1+j$

$$\begin{bmatrix} 1 & 3 \\ 3 & 4 \\ 4 & 5 \end{bmatrix}_{3 \times 2}$$

B

$b=2j-1$

$$\begin{bmatrix} 1 & 0 \\ 0 & 2 \\ 0 & 0 \end{bmatrix}_{3 \times 2}$$

$$A + B = \begin{bmatrix} 2 & 3 \\ 3 & 3 \\ 4 & 5 \end{bmatrix}$$

R: Alternativa

C)  $\begin{bmatrix} 2 & 3 \\ 3 & 3 \\ 4 & 5 \end{bmatrix}$

~~A) 1/2~~

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$$10 - m \begin{bmatrix} x & y \\ 10 & y \end{bmatrix} \quad P = \begin{bmatrix} 7 & 16 \\ 23 & 13 \end{bmatrix} \quad y-x=?$$

$$N = \begin{bmatrix} 9 & 6 \\ 12 & 14 \end{bmatrix}$$

$$\frac{3}{2}m + \frac{2}{3}N = P$$

$$m = \left\{ \begin{array}{c|c} \text{ou} \\ \hline \frac{3}{2}x & \frac{24}{2} \\ \hline 2 & \frac{3}{2}y \\ \hline 30 & \frac{3}{2}y \\ \hline 2 & 2y \end{array} \right\} + \left\{ \begin{array}{c|c} \text{ou} N \\ \hline \frac{2}{3} & \frac{12}{3} \\ \hline \frac{24}{3} & \frac{2 \times 18}{3} \\ \hline \frac{24}{3} & \frac{2 \times 18}{3} \end{array} \right\} = \left\{ \begin{array}{c|c} \text{ou} P \\ \hline 7 & 16 \\ \hline 23 & 13 \end{array} \right\}$$

$$3 \cdot 20 = 7 \quad 3 \cdot 20 + 2 \cdot 18 = 83$$

$$\left( \begin{array}{c|c} 30 & \frac{3}{2}y \\ \hline 2 & 2y \end{array} \right) \quad \left( \begin{array}{c|c} 24 & \frac{2 \times 18}{3} \\ \hline \frac{24}{3} & \frac{2 \times 18}{3} \end{array} \right)$$

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

$$9x + 9y = 42$$

$$[9x + 4y = 7]$$

$$\frac{3}{2}y + \frac{2}{3}x + \frac{8}{3} = 83$$

$$9y + 4x + 16 = 78$$

$$[9y + 4x = 62]$$

$$y-x = 9y+4x - (9x+4y) = 62-42$$

$$y-x = 20/5 = 4$$

$$9y + 4x - 9x - 4y = 20$$

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

Opção B)

$$\text{multiplo comum } y-x = \frac{20}{5}$$