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Turma: CTII250

Exercícios

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

$$a_{ij} = a_i + b_j$$

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

$$a_{11} = 2 \cdot 1 + 3 \cdot 1 = 2 + 3 = 5$$

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

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

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

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

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

$$A = \begin{bmatrix} 5 & 8 \\ 7 & 10 \\ 9 & 12 \end{bmatrix}$$

3×2

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

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

		x
a ₁₁	a ₁₂	
a ₂₁	a ₂₂	
5	17	
8	20	$2 \times 2 //$

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

$$a_{12} = 1^2 + 4 \cdot 2^2 = 1 + 16 = 17$$

$$a_{21} = 2^2 + 4 \cdot 1^2 = 4 + 4 = 8$$

$$a_{22} = 2^2 + 4 \cdot 2^2 = 4 + 16 = 20$$

R: alternativa A.

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

$$x+2 = -x$$

$$y-1 = 2y$$

$$z+1 = -2z$$

$$2x = -2$$

$$y = -1 //$$

$$z = -1/3 //$$

$$x = -1/2$$

$$x = -1 //$$

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

$$-x = y$$

$$3x = 2x+1$$

$$x = z-1$$

$$y = z-1 //$$

$$x = z-1 //$$

$$z-1 = z-1$$

$$z-1 = z$$

$$z = 2 //$$

$$5. A = \begin{array}{|ccc|} \hline 0 & 1 & \sqrt{2} & 1 \\ 1 & 0 & 1 & \sqrt{2} \\ \sqrt{2} & 1 & 0 & 1 \\ 1 & \sqrt{2} & 1 & 0 \\ \hline \end{array} \quad 4 \times 4 //$$

alternativa B

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

$$2A = \begin{bmatrix} -2 \\ 4 \\ 6 \end{bmatrix} \quad 2A - B = \begin{bmatrix} -2 \\ 6 \\ -5 \end{bmatrix}, \quad \text{e.i. alternativa D.}$$

$$7. A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} \quad e \quad B = \begin{bmatrix} -1 & 3 & 2 \\ 2 & 0 & 1 \end{bmatrix} \quad A - B^T$$

$$B^T = \begin{bmatrix} -1 & 2 \\ 3 & 0 \\ 2 & 1 \end{bmatrix} \quad A - B^T = \begin{bmatrix} 2 & 0 \\ 0 & 4 \\ 3 & 5 \end{bmatrix}, \quad \text{e.i. alternativa B}$$

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

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

$$x + y + z = (-1) + 2 + (-3) = -1 + 2 - 3 = -2, //$$

() + () = alternativa A

$$9 \quad A = (a_{ij}) \quad 3 \times 2$$

$$B = (b_{ij}) \quad 3 \times 2$$

$$a_{ij} = i + j \rightarrow i \neq j$$

$$a_{ij} = 1 \rightarrow i = j$$

$$A + B = ?$$

$$b_{ij} = 0 \rightarrow i \neq j$$

$$b_{ij} = 2i - j \rightarrow i = j$$

$$A \rightarrow \begin{matrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \end{matrix}$$

$$B \rightarrow \begin{matrix} b_{11} & b_{12} \\ b_{21} & b_{22} \\ b_{31} & b_{32} \end{matrix}$$

$$a_{11} = 1$$

$$b_{11} = 2 \cdot 1 - 1 = 1$$

$$a_{12} = 1 + 2 = 3$$

$$b_{12} = 0$$

$$a_{21} = 2 + 1 = 3$$

$$b_{21} = 0$$

$$a_{22} = 2$$

$$b_{22} = 2 \cdot 2 - 2 = 2$$

$$a_{31} = 3 + 1 = 4$$

$$b_{31} = 0$$

$$a_{32} = 3 + 2 = 5$$

$$b_{32} = 0$$

$$A = \begin{bmatrix} 1 & 3 \\ 3 & 1 \\ 4 & 5 \end{bmatrix}$$

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

$$A + B =$$

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

Alternativa C

3x2 //