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Turma: CTII250

Exercícios

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

$$a_{ij} = 2i + 3j$$

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

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

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

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

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

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

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

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

3x2 //

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

a_{11}	a_{12}
a_{21}	a_{22}

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

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

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

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

5	17
8	20

$2 \times 2 //$

R: alternativa A.

3.

1	$x+2$
$y-1$	$z+1$

 =

1	$-x$
$2y$	$-2z$

$$x+2 = -x$$

$$y-1 = 2y$$

$$z+1 = -2z$$

$$2x = -2$$

$$y = -1 //$$

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

$$x = -2/2$$

$$x = -1 //$$

4.

3	$-x$
$3x$	x

 =

3	y
$2x+1$	$z-1$

$$-x = y$$

$$3x = 2x+1$$

$$x = z-1$$

$$y = -1 //$$

$$x = 1 //$$

$$1 = z-1$$

$$1+1 = z$$

$$z = 2 //$$

5. $A =$

0	1	$\sqrt{2}$	1
1	0	1	$\sqrt{2}$
$\sqrt{2}$	1	0	1
1	$\sqrt{2}$	1	0

alternativa B

$4 \times 4 //$

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

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

$$2A - B$$

$$2A = \begin{bmatrix} -2 \\ 4 \\ 6 \end{bmatrix}$$

$$2A - B = \begin{bmatrix} -2 \\ 6 \\ -5 \end{bmatrix} //$$

R: alternativa D

$$7. A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$$

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

$$A - B^T$$

$$B^T = \begin{bmatrix} -1 & 2 \\ 3 & 0 \\ 2 & 1 \end{bmatrix}$$

$$A - B^T = \begin{bmatrix} 2 & 0 \\ 0 & 4 \\ 3 & 5 \end{bmatrix} //$$

R: alternativa B

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

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

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

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

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

alternativa A

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

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

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

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

$$A + B = ?$$

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

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

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

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

$$a_{21} \quad a_{22}$$

$$b_{21} \quad b_{22}$$

$$a_{31} \quad a_{32}$$

$$b_{31} \quad b_{32}$$

$$a_{11} = 1$$

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

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

$$b_{12} = 0$$

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

$$b_{21} = 0$$

$$a_{22} = 1$$

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

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

$$b_{31} = 0$$

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

$$b_{32} = 0$$

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

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

$$A + B =$$

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

$$3 \times 2 //$$

Alternativa C