EXERCÍCIO 1

01.

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

$a_{11} = 2 \cdot 1 + 3 \cdot 1 = 5$
$a_{12} = 2 \cdot 1 + 3 \cdot 2 = 8$
$a_{21} = 2 \cdot 2 + 3 \cdot 1 = 7$
$a_{22} = 2 \cdot 2 + 3 \cdot 2 = 10$
$a_{31} = 2 \cdot 3 + 3 \cdot 1 = 9$
$a_{32} = 2 \cdot 3 + 3 \cdot 2 = 12$

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

EXERCÍCIO 2

02.

$$\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$$

$a_{11} = 1^2 + 4 \cdot 1^2 = 5$
$a_{12} = 1^2 + 4 \cdot 2^2 = 17$
$a_{21} = 2^2 + 4 \cdot 1^2 = 8$
$a_{22} = 2^2 + 4 \cdot 2^2 = 20$

$$\begin{bmatrix} 5 & 17 \\ 8 & 20 \end{bmatrix} // \quad A)$$

EXERCÍCIO 3

03.

$x + 2 = -x$
$2x = -2$
$x = -1$ //

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

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

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EXERCÍCIO 4

04. $3x = 2x + 1$ $y = -x$ $z - 1 = 1$

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

$x = 1$ $z = 2$

05

EXERCÍCIO 5

05.

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

$a_{11} = 0$ $a_{31} = \sqrt{2}$

$a_{12} = 1$ $a_{32} = 1$

$a_{13} = \sqrt{2}$ $a_{33} = 0$

$a_{14} = 1$ $a_{34} = 1$

$a_{21} = 1$ $a_{41} = 1$

$a_{22} = 0$ $a_{42} = \sqrt{2}$

$a_{23} = 1$ $a_{43} = 1$

$a_{24} = \sqrt{2}$ $a_{44} = 0$

4   3

$D = \sqrt{2}$

1   2

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

EXERCÍCIO 6

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

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

EXERCÍCIO 7

07.

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

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

EXERCÍCIO 8

08.
$$A = \begin{bmatrix} 2 & -1 & 2y \\ x & 0 & -3 \\ 4 & 3 & 2 \end{bmatrix} \quad A^t = \begin{bmatrix} 2 & x & 4 \\ -1 & 0 & 3 \\ 2y & -3 & 2 \end{bmatrix}$$

$x = -1$ $y = 2y = 4$ $-3 = 3$ $3 + 2 + (-3) = -2$

$y = \frac{4}{2} = 2$ $3 = -3$ A)

EXERCÍCIO 9

09.
$$A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \end{bmatrix} \quad B = \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \\ b_{31} & b_{32} \end{bmatrix}$$

$a_{11} = 1$

$a_{22} = 1$ $A = \begin{pmatrix} 1 & 3 \\ 3 & 1 \\ 4 & 5 \end{pmatrix}$

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

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

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

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

$b_{11} = 2 \cdot 1 - 1 = 1$ $B = \begin{pmatrix} 1 & 0 \\ 0 & 2 \\ 0 & 0 \end{pmatrix}$

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

$b_{12} = 0$

$b_{21} = 0$

$b_{31} = 0$ $A + B = \begin{pmatrix} 2 & 3 \\ 3 & 3 \\ 4 & 5 \end{pmatrix}$

$b_{32} = 0$ C)

EXERCÍCIO 10

10. $3 \cdot \begin{bmatrix} x & 8 \\ 10 & y \end{bmatrix} + 2 \cdot \begin{bmatrix} y & 6 \\ 12 & x+4 \end{bmatrix} = \begin{bmatrix} 7 & 16 \\ 23 & 13 \end{bmatrix}$

$\begin{bmatrix} \frac{3x}{2} & 12 \\ 15 & \frac{3y}{2} \end{bmatrix} + \begin{bmatrix} \frac{2y}{3} & 4 \\ 8 & \left(\frac{2x+8}{3}\right) \end{bmatrix} = \begin{bmatrix} \frac{3x}{2}+\frac{2y}{3} & 16 \\ 23 & \left(\frac{2x+8}{3}\right)+\frac{3y}{2} \end{bmatrix}$

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

$\left(\frac{2x+8}{3}\right) + \frac{3y}{2} = 13$

♥

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

$6\left(\frac{3x}{2} + \frac{2y}{3}\right) = 6 \cdot 7$

$6 \cdot \frac{3x}{2} + 6 \cdot \frac{2y}{3} = 42$

$3 \cdot 3x + 2 \cdot 2y = 42$

$9x + 4y = 42$

$\left(\frac{2x+8}{3} + \frac{3y}{2}\right) = 13 \quad \times 6$

$2(2x+8) + 9y = 78$

$4x + 16 + 9y = 78$

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

$4x + 9y = 62$

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

$5y - 5x = 20 \quad (\div 5)$

$y - x = 4 \quad B)$