Nome: Isabelle Viana Santos CTII – 317

Tarefa básica

1.

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

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

2.

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

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

3. $X + 2 = -X$
$2X = -2$
$X = -1$

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

$z + 1 = -2z$
$z + 2z = -1$
$3z = -1$
$z = -1/3$

4. $3X = 2X + 1$
$3X - 2X = 1$
$X = 1$

$y = -X$
$y = -1$

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

5. $a_{11}=0$ $a_{21}=\sqrt{2}$
$a_{12}=1$ $a_{32}=1$
$a_{13}=\sqrt{2}$ $a_{33}=0$
$a_{14}=1$ $a_{34}=1$
$a_{21}=1$ $a_{41}=1$
$a_{22}=0$ $a_{42}=\sqrt{2}$
$a_{23}=1$ $a_{43}=1$
$a_{24}=\sqrt{2}$ $a_{44}=0$

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

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

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

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

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

9. $a_{11}=1$ $A = \begin{pmatrix} 1 & 3 \\ 3 & 1 \\ 4 & 5 \end{pmatrix}$ $b_{11}=2\cdot1-1=1$ $B = \begin{pmatrix} 1 & 0 \\ 0 & 2 \\ 0 & 0 \end{pmatrix}$
$a_{12}=1+2=3$ $b_{12}=0$
$a_{21}=2+1=3$ $b_{21}=0$
$a_{22}=1+$ $b_{22}=2\cdot2-2=2$
$a_{31}=3+1=4$ $b_{31}=0$
$a_{32}=3+2=5$ $b_{32}=0$

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

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

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

$$\begin{matrix} 3x/2 + 2y/3 & 16 \\ 23 & \left(\frac{2x+8}{3}\right) + 3y/2 \end{matrix}$$

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

$6\left(\frac{3x}{2} + \frac{2y}{3}\right) = 6.7$

$3.3x + 2.2y = 42$

$9x + 4y = 42$,,

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

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

$4x + 16 + 9y = 78$

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

$4x + 9y = 62$,,

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

$5y - 5x = 20$

$y - x = 4$,,