Exercícios Matrizes

1.

a) matriz do tipo 4x5

b) $a_{3,4} = 1/2$

$L_2 = [2 \quad \sqrt{2} \quad 0 \quad 8 \quad 4]$

$$C_5 = \begin{bmatrix} -1 \\ 4 \\ 7 \\ 6 \end{bmatrix}$$

c) a diagonal da matriz é $[0 \quad \sqrt{2} \quad 5 \quad 6]$

2.

a) $M = [m d c (i,j)] \quad i = 1, \ldots, 6 \quad ; \quad j = 1, \ldots, 6$

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

← matriz quadrada e simétrica

↳ diagonal da matriz

b) $A = [2i \times (j-2)] \quad i = 1, 2, 3 \quad ; \quad j = 1, 2$

ex: $a_{11} = 2 \times 1 \times (1-2) = -2$

$$A = \begin{bmatrix} -2 & 0 \\ -4 & 0 \\ -6 & 0 \end{bmatrix}$$

c) $B = [b_{ij}] \quad i = 1, 2, 3 \quad j = 1, 2$, onde $b_{ij} = |1 + i - j|$;

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

d)

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

$$A + 2B = \begin{bmatrix} 0 & 0 \\ 0 & 2 \\ 0 & 4 \end{bmatrix}$$

3.

a)
$$A = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 1 \end{bmatrix}$$

b)
$$A = \begin{bmatrix} 2 & 4 & 6 \\ 4 & 4 & 6 \\ 6 & 6 & 6 \end{bmatrix}$$

4.

a)
$$\begin{bmatrix} 2 & 1 & 2 \\ -1 & -2 & 3 \\ 1 & -1 & 2 \\ 4 & 1 & 0 \end{bmatrix} \cdot \begin{bmatrix} -3 \\ -2 \\ 1 \end{bmatrix} = \begin{bmatrix} -6 \\ 10 \\ 1 \\ -14 \end{bmatrix}$$

b)
$$\begin{bmatrix} 0 & 1 & 2 \\ 3 & -2 & 0 \\ 0 & 1 & 0 \end{bmatrix} \cdot \begin{bmatrix} -3 \\ -2 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ -5 \\ -2 \end{bmatrix}$$