

Exercícios

1- Dadas AB e BA

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

$$AB = \begin{bmatrix} -3 & 1 & 6 & 3 & 0 & -4 \\ 0 & 2 & 0 & -6 & 0 & 8 \end{bmatrix}$$

$$A \rightarrow 2 \times 2 \quad B \rightarrow 2 \times 3$$

$$B \rightarrow 2 \times 3 \quad A \rightarrow 2 \times 2$$

$$AB = \begin{bmatrix} -4 & 9 & -4 \\ 2 & -6 & 8 \end{bmatrix}$$

Existe \tilde{N} existe

2- Dadas AB e BA

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

$$A = 2 \times 3 \quad B = 3 \times 2$$

$$B = 3 \times 2 \quad A = 2 \times 3$$

Existe \tilde{N} existe

$$\begin{array}{|l|l|l|l|} \hline \begin{array}{l} \rightarrow 21 \\ 5 \cdot 3 = 15 \\ 2 \cdot 1 = 2 \\ -1 \cdot -4 = 4 \end{array} & \begin{array}{l} \rightarrow 13 \\ 7 \cdot 3 = 21 \\ 4 \cdot 1 = 4 \\ 3 \cdot -4 = -12 \end{array} & \begin{array}{l} \rightarrow 1 \\ 3 \cdot 5 = 15 \\ 1 \cdot 7 = 7 \\ -2 \cdot 7 = -14 \end{array} & \begin{array}{l} \rightarrow -10 \\ 1 \cdot 2 = 2 \\ -3 \cdot 4 = -12 \end{array} \\ \hline \begin{array}{l} \rightarrow 16 \\ 5 \cdot -2 = -10 \\ 2 \cdot 3 = 6 \\ -1 \cdot 0 = 0 \end{array} & \begin{array}{l} \rightarrow 26 \\ 7 \cdot -2 = -14 \\ 4 \cdot 3 = 12 \\ 3 \cdot 0 = 0 \end{array} & \begin{array}{l} \rightarrow 4 \\ -4 \cdot 1 = -4 \\ 0 \cdot 3 = 0 \end{array} & \begin{array}{l} \rightarrow 0 \end{array} \\ \hline \end{array}$$

$$AB \rightarrow \begin{bmatrix} 21 & -16 \\ 13 & -26 \end{bmatrix}$$

$$BA \rightarrow \begin{bmatrix} 1 & -10 \\ 4 & 0 \end{bmatrix}$$

3- Produto $A \cdot A^T$

$$A = \begin{bmatrix} -1 & 0 \\ 1 & 2 \end{bmatrix} \quad A^T = \begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}$$

$$A \cdot A = \begin{bmatrix} 1 & 0 & -10 \\ -10 & 14 \end{bmatrix}$$

$$A \cdot A^T = \begin{bmatrix} 1 & -1 \\ -1 & 5 \end{bmatrix}$$

$$\downarrow$$

$$\begin{bmatrix} 1 & -1 \\ -1 & 5 \end{bmatrix}$$

Letra B.

4- Elemento da matriz $C = A \cdot B$

$$A \rightarrow 2 \times 3 \quad A = \begin{bmatrix} 1 & 2 & 5 \\ 3 & 4 & 6 \end{bmatrix} \quad B = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} \quad C = \begin{bmatrix} 1 & 4 & 15 \\ 9 & 8 & 12 \end{bmatrix} \rightarrow \begin{bmatrix} 20 \\ 29 \end{bmatrix}$$

$$B \rightarrow 3 \times 1$$

Resposta: letra A.

Elemento $C_{21} \rightarrow 29$.

5-a) $\begin{bmatrix} 25 & 50 & 200 & 20 \\ 28 & 60 & 150 & 22 \end{bmatrix}$

$$\begin{bmatrix} 1.00 & 1.00 \\ 8.00 & 10.00 \\ 0.80 & 0.80 \\ 1.50 & 1.00 \end{bmatrix}$$

R_1

F_2

$$\rightarrow \begin{bmatrix} 635 & 705 \\ 676 & 770 \end{bmatrix}$$

Ps. fornecer 1 é mais barato e o restaurante 1 gasta menos no total.

b)

$$\begin{bmatrix} 1 & 1 \\ 8 & 10 \\ 0.9 & 0.8 \\ 1.5 & 1 \end{bmatrix}$$

\rightarrow

$$\begin{bmatrix} 25 & 400 & 180 & 30 & 25 & 500 & 160 & 30 \\ 28 & 480 & 135 & 33 & 28 & 600 & 129 & 22 \end{bmatrix}$$

Restaurante 1 $\rightarrow R\$ 70,00$ (lucro) $\rightarrow 164$ (lucro total)

Restaurante 2 $\rightarrow R\$ 94,00$ (lucro)

6- $\begin{bmatrix} 0 & 1 \\ \alpha & 1 \end{bmatrix} \cdot \begin{bmatrix} \alpha & 1 \\ -1 & 0 \end{bmatrix} \rightarrow \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \quad \alpha \cdot 0 = 1$

Resposta: letra E

$$\alpha = 1$$