

Taller de Álgebra Lineal

Problemas

1. Sea $A \in R^{2 \times 2}$ y $B \in R^{2 \times 2}$, tales que:

$$A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}, \quad B = \begin{pmatrix} 5 & 6 \\ 7 & 8 \end{pmatrix}.$$

Calcule la suma $A + B$.

2. Dadas las matrices $C \in R^{3 \times 3}$ y $D \in R^{3 \times 3}$:

$$C = \begin{pmatrix} 1 & 0 & 2 \\ 3 & -1 & 4 \\ 0 & 5 & 6 \end{pmatrix}, \quad D = \begin{pmatrix} 2 & 3 & 1 \\ -2 & 0 & 4 \\ 1 & 7 & 3 \end{pmatrix}.$$

Determine $C + D$.

3. Sea la matriz $E \in R^{2 \times 2}$:

$$E = \begin{pmatrix} 4 & -2 \\ 1 & 3 \end{pmatrix}.$$

Calcule $3E$.

4. Dada la matriz $F \in R^{3 \times 3}$:

$$F = \begin{pmatrix} 2 & 1 & 0 \\ 4 & -1 & 2 \\ 3 & 5 & -3 \end{pmatrix},$$

calcule $-2F$.

5. Sea $G \in R^{2 \times 3}$:

$$G = \begin{pmatrix} 1 & 4 & 6 \\ 3 & 5 & 2 \end{pmatrix}.$$

Encuentre G^T .

6. Dada la matriz $H \in R^{3 \times 2}$:

$$H = \begin{pmatrix} 2 & 5 \\ 0 & 1 \\ 4 & 3 \end{pmatrix},$$

calcule H^T .

7. Sean las matrices $I \in R^{2 \times 2}$ y $J \in R^{2 \times 2}$:

$$I = \begin{pmatrix} 1 & 3 \\ 2 & 4 \end{pmatrix}, \quad J = \begin{pmatrix} 2 & 0 \\ 1 & -1 \end{pmatrix}.$$

Calcule $2I + 3J$.

8. Dadas las matrices $K \in R^{3 \times 3}$ y $L \in R^{3 \times 3}$:

$$K = \begin{pmatrix} 1 & 0 & 2 \\ 4 & 1 & 3 \\ 0 & 5 & -1 \end{pmatrix}, \quad L = \begin{pmatrix} 2 & 3 & 1 \\ 0 & 4 & 2 \\ 1 & -1 & 5 \end{pmatrix},$$

determine $4K - L$.

9. Sea $M \in R^{2 \times 3}$ y $N \in R^{2 \times 3}$:

$$M = \begin{pmatrix} 1 & 0 & 3 \\ 4 & 5 & 6 \end{pmatrix}, \quad N = \begin{pmatrix} 2 & 3 & 1 \\ 0 & -2 & 4 \end{pmatrix}.$$

Calcule $M^T + N^T$.

10. Sea $O \in R^{2 \times 3}$:

$$O = \begin{pmatrix} 2 & 3 & 4 \\ 1 & 5 & 6 \end{pmatrix}.$$

Calcule $2O^T$.