

Cálculo de la inversa con determinantes

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Ejemplo

$$A = \begin{pmatrix} 2 & 1 & 0 \\ 0 & 1 & 3 \\ 2 & 1 & 1 \end{pmatrix}$$

$$A^{-1} = \frac{\text{Adj}(A^t)}{|A|}$$

$$|A| = (2 + 0 + 6) - (0 + 6 + 0) = 2 \neq 0$$

$$A^t = \begin{pmatrix} 2 & 0 & 2 \\ 1 & 1 & 1 \\ 0 & 3 & 1 \end{pmatrix}_{3 \times 3}$$

$$\text{Adj}(A^t) = \begin{pmatrix} \begin{vmatrix} 1 & 1 \\ 3 & 1 \end{vmatrix} & -\begin{vmatrix} 1 & 1 \\ 0 & 1 \end{vmatrix} & \begin{vmatrix} 1 & 1 \\ 0 & 3 \end{vmatrix} \\ -\begin{vmatrix} 0 & 2 \\ 3 & 1 \end{vmatrix} & \begin{vmatrix} 2 & 2 \\ 0 & 1 \end{vmatrix} & -\begin{vmatrix} 2 & 0 \\ 0 & 3 \end{vmatrix} \\ \begin{vmatrix} 0 & 2 \\ 1 & 1 \end{vmatrix} & -\begin{vmatrix} 2 & 2 \\ 1 & 1 \end{vmatrix} & \begin{vmatrix} 2 & 0 \\ 1 & 1 \end{vmatrix} \end{pmatrix}_{3 \times 3}$$

$$\text{Adj}(A^t) = \begin{pmatrix} -2 & -1 & 3 \\ 6 & 2 & -6 \\ -2 & 0 & 2 \end{pmatrix}$$

$$A^{-1} = \frac{\begin{pmatrix} -2 & -1 & 3 \\ 6 & 2 & -6 \\ -2 & 0 & 2 \end{pmatrix}}{2} = \begin{pmatrix} -1 & -1/2 & 3/2 \\ 3 & 1 & -3 \\ -1 & 0 & 1 \end{pmatrix}$$