Kata 6

Calcular la inversa de las siguientes matrices

a) $\begin{bmatrix} 3 & -2 \\ -5 & 4 \end{bmatrix}$

$$a^{-1} = \frac{1}{|A|} adj(a^t) =$$

$$|A| = 3(4) - (-5)(-2) = 12 - 10 = 2$$

$$adj(a^t) = \begin{bmatrix} 4 & 2 \\ 5 & 3 \end{bmatrix}$$

$$a^{-1} = \frac{1}{2}\begin{bmatrix} 4 & 2 \\ 5 & 3 \end{bmatrix} = \begin{bmatrix} 2 & 1 \\ \frac{5}{2} & 3/2 \end{bmatrix}$$

b) $\begin{bmatrix} 1 & -1 & 1 \\ 2 & 1 & -1 \\ 1 & 1 & 2 \end{bmatrix}$ ← fijo

$|A| = (1)(2+1) - (-1)(4+1) + (1)(2-1) =$

$|A| = 1(3) - (-1)(5) + (1)(1) =$

$|A| = 3+5+1 = 9$ //

$$A^t = \begin{bmatrix} 1 & 2 & 1 \\ -1 & 1 & 1 \\ 1 & -1 & 2 \end{bmatrix}$$

$$adj(A^t) = \begin{bmatrix} +3 & -(-3) & +0 \\ -5 & +1 & -(-3) \\ +1 & -2 & +3 \end{bmatrix}$$

$$a^{-1} = \frac{1}{9}\begin{bmatrix} 3 & 3 & 0 \\ -5 & 1 & 3 \\ 1 & -2 & 3 \end{bmatrix} = \begin{bmatrix} 1/3 & 1/3 & 0 \\ -5/9 & 1/9 & 1/3 \\ 1/9 & -2/9 & 1/3 \end{bmatrix}$$

Demostrar que la siguiente matriz carece de inversa

determinante

$$\begin{bmatrix} 2 & 1 & -2 \\ 1 & -2 & 3 \\ 4 & -3 & 4 \end{bmatrix} = A \quad \leftarrow \text{fijo}$$

$$|A| = 2(-8-(-9)) - 1(4-12) - 2(-3-(-8))$$

$$= 2(-8+9) - 1(-8) - 2(-3+8) =$$

$$= 2(1) + 8 - 2(5)$$

$$= 2+8-10 = \underline{0 //}$$