

1= Encuentra el Cofactor y el menor

El menor
 $1 = \begin{bmatrix} -1 & 0 \\ 3 & 2 \end{bmatrix} \quad M_{12} = \begin{bmatrix} 3 \end{bmatrix} = \underline{3}$

El cofactor

$$A_{12} = (-1)^{1+2} M_{12} = (-1)^3 (3) = \underline{-3}$$

Menor
 $2 = \begin{bmatrix} 3 & 5 \\ -2 & 0 \end{bmatrix} \quad M_{22} = \begin{bmatrix} 3 \end{bmatrix} = \underline{3}$

Cofactor

$$A_{22} = (-1)^4 (3) = \underline{3}$$

Menor
 $3 = \begin{bmatrix} 2 & -1 & 4 \\ 3 & 2 & 7 \\ 0 & 1 & -1 \end{bmatrix} \quad M_{12} = \begin{bmatrix} 2 & 7 \\ 1 & -1 \end{bmatrix} \quad (2)(-1) - (1)(7) = \underline{-9}$

Cofactor

$$A_{12} = (-1)^3 \begin{bmatrix} 2 & 7 \\ 1 & -1 \end{bmatrix} = -1[(2)(-1) - (1)(7)] = \underline{9}$$

Menor
 $4 = \begin{bmatrix} -1 & 1 & 0 \\ 0 & 1 & -2 \\ 3 & 2 & 4 \end{bmatrix} \quad M_{23} = \begin{bmatrix} -1 & 1 \\ 3 & 2 \end{bmatrix} = (-1)(2) - (3)(1) = \underline{-5}$

Cofactor

$$A_{23} = (-1)^5 \begin{bmatrix} -1 & 1 \\ 3 & 2 \end{bmatrix} = (-1)[(-1)(2) - (3)(1)] = \underline{5}$$

2: Calcule el valor del determinante

5: $[-2] = |A| = \underline{2}$

6: $\begin{bmatrix} -1 & 0 \\ 1 & 6 \end{bmatrix} |A| = (-1)(6) - (1)(0) = \underline{-6}$

7: $\begin{bmatrix} 3 & 1 \\ 0 & 2 \end{bmatrix} |A| = (3)(2) - (1)(0) = \underline{6}$

8: $\begin{bmatrix} 3 & -2 \\ 1 & 4 \end{bmatrix} |A| = (3)(4) - (1)(-2) = \underline{14}$

9: $\begin{bmatrix} c & d \\ -d & c \end{bmatrix} |A| = (c)(c) - (-d)(d) = \underline{c^2 - (-d^2)} = \underline{c^2 + d^2}$

10: $\begin{bmatrix} a & b \\ 2a & 2b \end{bmatrix} |A| = (a)(2b) - (2a)(b) = 2ab - 2ab = \underline{0}$

11: $\begin{bmatrix} -1 & 0 & 2 \\ 0 & 1 & 3 \\ 3 & 4 & 0 \end{bmatrix} \quad \begin{bmatrix} -1 & 0 & 2 & -1 & 0 \\ 0 & 1 & 3 & 0 & 1 \\ 3 & 4 & 0 & 3 & 4 \end{bmatrix}$

$$A = [(-1)(1)(0) + (0)(3)(3) + (2)(0)(4) - (3)(1)(2) + (4)(3)(-1) + (0)(0)(0)]$$

6 - 12

$$A = 0 - 6$$

$$\underline{A = -6}$$

$$12 = \begin{bmatrix} 3 & 5 & 0 \\ 0 & 1 & 0 \\ 3 & 4 & 5 \end{bmatrix} \quad \begin{array}{c|c} 3 & 5 \\ 0 & 1 \\ 3 & 4 \end{array} \quad \begin{array}{c|c} 3 & 5 \\ 0 & 1 \\ 3 & 4 \end{array} \quad \begin{aligned} & [(3)(1)(5) + (5)(0)(3) + (0)(0)(4)] \\ & - [(3)(1)(0) + (4)(0)(3) + (5)(0)(5)] \end{aligned}$$

$$A = 15 - 0$$

$$\underline{A = 15}$$

$$13 = \begin{bmatrix} 3 & 2 & 1 \\ 1 & -1 & 0 \\ 2 & 3 & 0 \end{bmatrix} \quad \begin{array}{c|c} 3 & 2 \\ 1 & -1 \\ 2 & 3 \end{array} \quad \begin{array}{c|c} 3 & 2 \\ 1 & -1 \\ 2 & 3 \end{array} \quad \begin{aligned} & [(3)(-1)(0) + (2)(0)(2) + (1)(1)(3)] \\ & - [(2)(-1)(1) + (3)(0)(3) + (0)(1)(2)] \end{aligned}$$

$$A = 3 - (-2)$$

$$\underline{A = 5}$$

$$14 = \begin{bmatrix} 2 & 5 & 1 \\ 3 & 4 & 0 \\ 2 & -1 & 1 \end{bmatrix} \quad \begin{array}{c|c} 2 & 5 \\ 3 & 4 \\ 2 & -1 \end{array} \quad \begin{array}{c|c} 2 & 5 \\ 3 & 4 \\ 2 & -1 \end{array} \quad \begin{aligned} & [(2)(4)(1) + (5)(0)(2) + (1)(3)(-1)] \\ & - [(2)(4)(1) + (-1)(0)(2) + (1)(3)(5)] \end{aligned}$$

$$A = 5 - 23$$

$$\underline{A = -18}$$

$$15 = \begin{bmatrix} 1 & 0 & 3 & 2 \\ -1 & 0 & 1 & 4 \\ 2 & 1 & 3 & 4 \\ 1 & -1 & 5 & 6 \end{bmatrix}$$

$$\begin{vmatrix} 1 & 3 & 2 & 1 & 3 \\ -1 & 1 & 4 & -1 & 1 \\ 2 & 3 & 4 & 2 & 3 \end{vmatrix}$$

$$= [(1)(1)(4) + (3)(4)(2) + (2)(-1)(3)] - [(2)(1)(2) + (3)(4)(1) + (4)(-1)(3)]$$

$$22 - 4$$

$$18 \quad -1$$

$$\begin{vmatrix} 1 & 3 & 2 & 1 & 3 \\ -1 & 1 & 4 & -1 & 1 \\ 1 & 5 & 6 & 1 & 5 \end{vmatrix}$$

$$= [(1)(1)(6) + (3)(4)(1) + (2)(-1)(5)] - [(1)(1)(2) + (5)(4)(1) + (6)(-1)(3)]$$

$$8 - 4 = 4$$

$$a_{21}A_{21} + a_{22}A_{22} + a_{33}A_{33} + a_{44}A_{44}$$

$$|A| = (-18)(1) + (4)(1)$$

$$|A| = 18 + 4 = 22$$

$$16 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 \\ 3 & 2 & 0 & 4 \\ 5 & 2 & 3 & 2 \end{bmatrix}$$

$$\begin{array}{ccc|cc} 1 & 0 & 0 & 1 & 0 \\ 3 & 2 & 4 & 3 & 2 \\ 5 & 2 & 2 & 5 & 2 \end{array} = \begin{bmatrix} (5)(4)(0) + (2)(4)(1) + (2)(3)(0) \\ - (1)(2)(2) + (0)(4)(5) + (0)(3)(2) \end{bmatrix}$$

$$8 - 2$$

$$\underline{6} \times$$

$$\begin{array}{ccc|cc} 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 3 & 2 & 4 & 3 & 2 \end{array} = 0$$

$$3(0) + 6(2)$$

$$\underline{12} \times$$

$$17 = \begin{bmatrix} a & 0 & 0 & 0 \\ 0 & 0 & 0 & d \\ 0 & c & 0 & 0 \\ 0 & 0 & b & 0 \end{bmatrix} = 0 \times$$

$$18 = \begin{bmatrix} a & 1 & 2 & 3 \\ 0 & b & 3 & 4 \\ 0 & 0 & c & 5 \\ 0 & 0 & 0 & d \end{bmatrix} = 0 \times$$

3: Indique si es verdadero o falso.

$$19 = \begin{bmatrix} 3 & 2 & 1 \\ -1 & 2 & 4 \\ 0 & 7 & 8 \end{bmatrix} = - \begin{bmatrix} 3 & 2 & 1 \\ 0 & 7 & 8 \\ -1 & 2 & 4 \end{bmatrix} \quad \text{Verdadero}$$

$$20 = \begin{bmatrix} 2 & 4 \\ -1 & 3 \end{bmatrix} = 2 \begin{bmatrix} 1 & 2 \\ -1 & 3 \end{bmatrix} \quad \text{Verdadero}$$

$$21 = \begin{bmatrix} 3 & 4 & 0 & 6 \\ 7 & 8 & 0 & 2 \\ 3 & 4 & 0 & 1 \\ 0 & -1 & 0 & 2 \end{bmatrix} = 0 \quad \text{Verdadero}$$

$$22 = \begin{bmatrix} 2 & 3 & 4 & 1 \\ -1 & 2 & -1 & 5 \\ 7 & 8 & 0 & 1 \\ 6 & 4 & 1 & 6 \end{bmatrix} = - \begin{bmatrix} 2 & 3 & -4 & 1 \\ -1 & 2 & 1 & 5 \\ 7 & 8 & 0 & 1 \\ 6 & 4 & -1 & 6 \end{bmatrix} \quad \text{Falso}$$

$$23 = \begin{bmatrix} -1 & 3 & 2 \\ 4 & 1 & 5 \\ 2 & -4 & 3 \end{bmatrix} = \begin{bmatrix} -1 & 3 & 2 \\ 4 & 1 & 5 \\ 0 & 2 & 1 \end{bmatrix} \quad \text{Verdadero}$$

$$24 = \begin{bmatrix} -1 & 1 & 2 \\ 2 & -1 & 3 \\ 3 & -1 & 4 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 2 \\ 1 & -1 & 3 \\ 2 & -1 & 4 \end{bmatrix} \quad \text{Falso}$$

$$25 = \begin{bmatrix} 3 & 1 & 3 \\ -2 & 0 & -2 \\ 6 & 4 & 6 \end{bmatrix} = 0 \quad \text{verdadero} //$$

$$26 = \begin{bmatrix} 7 & 2 & 1 \\ 6 & 8 & 2 \\ 3 & 4 & 1 \end{bmatrix} = 0 \quad \text{Falso} //$$