

TARIFA BÁSICA - DETERMINANTES

① A $\begin{bmatrix} 2 & 3 \\ 1 & 5 \end{bmatrix}$ DET = $10 - 3 = 7$

② B $\begin{bmatrix} -2 & -4 \\ 3 & 6 \end{bmatrix}$ DET = $-12 - (-12) = 0$

③ C $\begin{bmatrix} 3 & -7 & 1 & 1 \\ 2 & 1 & -7 & 1 \\ 1 & 4 & -2 & 7 \\ 1 & 1 & 1 & 4 \end{bmatrix}$ DET = $3 - (-7) = 10$
 $-6 + 1 + 8 = 3$
 $1 + (-12) + 4 = -7$
 $-3 + 3 + 16 = 16$

④ D $\begin{bmatrix} 3 & 2 & -1 & 1 \\ 2 & 3 & 1 & 2 \\ 1 & 1 & 4 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$ DET = $36 - (+16) = 20$
 $36 + 2 + (-2) = 36$

⑤ E $\begin{bmatrix} -3 & 0 & 0 & -3 \\ 0 & -3 & 0 & 0 \\ 0 & 0 & -3 & 0 \\ 0 & 0 & 0 & -3 \end{bmatrix}$ $0 + 0 + 0 = 0$

$$\textcircled{B} \quad \begin{vmatrix} -2 & -4 \\ 3 & 6 \end{vmatrix} \quad \text{DET} = -12 - (-12) = 0$$

$$\textcircled{C} \quad \begin{vmatrix} 3 & -1 & 2 & 3 \\ 2 & 1 & 7 & 2 \\ 1 & 7 & 4 & 2 \\ 1 & 4 & 2 & 7 \end{vmatrix} \quad \text{DET} = 3 - (-7) = 10$$

$-6 + 1 + 8 = 3$
 $1 + (-12) + 4 = -7$

$$\textcircled{D} \quad \begin{vmatrix} 3 & 2 & -1 & 3 \\ 2 & 3 & 1 & 2 \\ 1 & 1 & 4 & 1 \\ 1 & 1 & 4 & 1 \end{vmatrix} \quad \text{DET} = 36 - (+16) = 20$$

$-3 + 3 + 16 = 16$
 $36 + 27(-2) = 36$

$$\textcircled{E} \quad \begin{vmatrix} -3 & 0 & 0 & -3 \\ 0 & -3 & 0 & 0 \\ 0 & 0 & 3 & 0 \\ 0 & 0 & 0 & 0 \end{vmatrix} \quad \text{DET} = -27 \text{ ALTERNATIVA A}$$

$0 + 0 + 0 = 0$
 $-27 + 0 + 0 = -27$

DSTQQSS

③ $x^2 + 12x + 9$

$$\begin{array}{|ccc|} \hline & x & 1 \\ & x & 1 \\ \hline 3 & x & 4 \\ 3 & x & \\ \hline 1 & 3 & 3 \\ 1 & 3 & 3 \\ \hline & 3x^2 + 4x + 9x & \end{array}$$

$$DET = \left\{ -\frac{1}{2}; 2 \right\}$$

ALTERNATIVA E

$$DET = (3x^2 + 4 + 9x) - (x^2 + 12x + 9) = -3$$

$$\Delta = B^2 - 4AC$$

$$3x^2 + 4 + 9x - x^2 - 12x - 9 = -3$$

$$\Delta = 3^2 - 4 \cdot 2 \cdot -2$$

$$2x^2 - 5 - 3x = -3$$

$$\Delta = 9 + 16$$

$$2x^2 - 2 - 3x = 0$$

$$\Delta = 25$$

$$DET = \frac{3 \pm \sqrt{25}}{2 \cdot 2} \rightarrow x_1 = \frac{3+5}{4} = \frac{8}{4} = 2$$

$$x_2 = \frac{3-5}{4} = \frac{-2}{4} = -\frac{1}{2}$$

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

$A_{15} = 2 \cdot 1 - 3 \cdot 1 = 2 - 3 = -1$

$B_{11} = 1 - 1 = 0$

$B_{12} = 2 - 1 = 1$

$B_{13} = 3 - 1 = 2$

$B_{21} = 7 - 2 = -1$

$B_{22} = 2 - 2 = 0$

$B_{23} = 3 - 2 = 1$

$$A_{11} = 2 \cdot 1 - 3 \cdot 1 = -1$$

$$A_{12} = 2 \cdot 1 - 3 \cdot 1 = -4$$

$$A_{13} = 2 \cdot 2 - 3 \cdot 1 = 1$$

$$A_{21} = 2 \cdot 2 - 3 \cdot 2 = -2$$

$$A_{22} = 2 \cdot 2 - 3 \cdot 2 = -2$$

$$A_{23} = 2 \cdot 3 - 3 \cdot 1 = 3$$

$$A_{31} = 2 \cdot 2 - 3 \cdot 1 = 1$$

$$A_{32} = 2 \cdot 2 - 3 \cdot 2 = 0$$

$$A_{33} = 2 \cdot 3 - 3 \cdot 2 = 0$$

$$AB = \begin{bmatrix} 0 & 1 & 2 \\ -1 & 0 & 1 \end{bmatrix}$$

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

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

$$0+0-12$$

$$24-0-36=-12$$

$$\text{DET} = -12 - (-12) = 0$$

ALTERNATIVA E

$$\textcircled{6} \quad A = \begin{bmatrix} 2 & 0 & -1 \\ -1 & 1 & 0 \end{bmatrix} \quad B = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix} \quad AB = \begin{bmatrix} 2+0+0 & -2+0-2 \\ -1-1+0 & 1+1+0 \end{bmatrix}$$

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$$AB = \begin{bmatrix} 2 & -4 \\ -2 & 2 \end{bmatrix} \xrightarrow[4]{8}$$

$$\det = 4 - 8 = -4$$

ALTERNATIVA D