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①

$$A = \begin{bmatrix} p & 2 & 2 \\ p & 4 & 4 \\ p & 4 & 1 \end{bmatrix} = -18$$

$$B = \begin{bmatrix} p & -1 & 2 \\ p & -2 & 4 \\ p & -2 & 1 \end{bmatrix} = ?$$

$$-18 \cdot \frac{-1}{2} = 9$$

Setro E

$$\frac{B_{12}}{A_{12}}$$

↓

$$\frac{-1}{2}$$

②

$$|A_{4 \times 4}| = -6$$

$$|2A| = 2^4 \cdot -6$$

$$2A = -96$$

$$-96 = x - 97$$

$$x = -96 + 97$$

$$x = 1$$

Setro C

③

$$\Delta = \Delta \cdot \frac{y}{x}$$

$$\Delta = \frac{\Delta}{x} \cdot y$$

$$\Delta = \frac{\Delta}{\left(\frac{x}{y}\right)}$$

Setra €

④

$$\begin{vmatrix} 2 & 1 & 0 \\ k & k & k \\ 1 & 2 & -2 \end{vmatrix} = 10$$

$$\begin{vmatrix} 2 & 1 & 0 \\ k+4 & k+3 & k-1 \\ 1 & 2 & -2 \end{vmatrix} =$$

$$\begin{vmatrix} 2 & 1 & 0 \\ k & k & k \\ 1 & 2 & -2 \end{vmatrix} + \begin{vmatrix} 2 & 1 & 0 \\ 4 & 3 & -1 \\ 1 & 2 & -2 \end{vmatrix} = 10 + 0 = 10$$

$$\begin{vmatrix} 2 & 1 & 0 \\ 4 & 3 & -1 \\ 1 & 2 & -2 \end{vmatrix} = -12 - (-12) = 0$$

Letra IC

(5)

$$\left| \begin{array}{ccc|c} 1 & -11 & 6 & 1 \\ -2 & 4 & -3 & -2 \\ -3 & -7 & 2 & -3 \end{array} \right|$$

↖ Sem filas paralelas iguais
Sem colunas proporcionais
Sem linhas proporcionais

↗ L_1 resultante de combinação linear com as outras duas pela fórmula:

$$C_2 + 2C_3 = C_1$$

$$-11 + 2(6) = 1$$

$$4 + 2(-3) = -2$$

$$-7 + 2(2) = -3$$

Setor D

⑥

$$\begin{vmatrix} 1 & x & x^2 \\ 1 & 2 & 4 \\ 1 & -3 & 9 \end{vmatrix} = 0$$

$$\begin{bmatrix} 1 & x & x^2 & 1 & x \\ 1 & 2 & 4 & 1 & 2 \\ 1 & -3 & 9 & 1 & -3 \end{bmatrix}$$

$$2x^2 + (-12) + 9x$$
$$2x^2 + 9x - 12$$

$$18 + 4x - 3x^2$$
$$-3x^2 + 4x + 18$$

~~scribbled out text~~

$$-3x^2 + 4x - 18$$

$$2x^2 + 9x - 12$$

$$-3x^2 + 4x + 18 - (2x^2 + 9x - 12)$$

~~$$-3x^2 + 4x + 18 - 2x^2 - 9x + 12$$~~

$$-5x^2 - 5x + 30 = 0$$

$$x_1 = -3$$

$$x_2 = 2$$

⑦

$$\begin{vmatrix} 1 & 0 & 0 & 0 & 0 \\ 2 & 2 & 0 & 0 & 0 \\ 3 & 2 & 1 & 0 & 0 \\ 4 & 2 & 3 & -2 & 0 \\ 5 & 1 & 2 & 3 & 3 \end{vmatrix}$$

matriz triangulari

$$D = 1 \cdot 2 \cdot 1 \cdot -2 \cdot 3$$

$$D = -12$$

Setra D 3