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TURMA 348

$$I - \begin{cases} \sqrt{x} + 4y = 1 \\ x + 2y = B \end{cases} \rightarrow \begin{vmatrix} \sqrt{x} & 4 \\ 1 & 2 \end{vmatrix} = (1 \cdot 4) - (\sqrt{x} - 2) = 4 - 2\sqrt{x} = 0$$

$$a = 4/2$$

$$\boxed{a = 2}$$

$$\rightarrow \begin{pmatrix} 2 & 4 & 1 \\ 1 & 2 & B \end{pmatrix} \sim \begin{pmatrix} 0 & 0 & 2B \end{pmatrix} \mid 0 = 2B \rightarrow \text{INDETERMINADO (LETRA "B")}$$

$$II - \begin{cases} X + KY = 1 \\ KX + Y = 1 - K \end{cases} \rightarrow \begin{vmatrix} 1 & K \\ K & 1 \end{vmatrix} = 1 - K^2$$

$$\rightarrow \begin{pmatrix} 1 + K & 1 \\ K + 1 & 1 - K \end{pmatrix} \sim \begin{pmatrix} 1 - K & K - 1 & K \end{pmatrix} \mid 1 - K + K - 1 = K$$

$$\boxed{0 = K}$$

INDETERMINADO (LETRA "D")

$$III - A) \begin{cases} X + 2Y + 0Z = 1 \\ 0 + Y + 1Z = 2 \\ 3X + 2Y + 2Z = -1 \end{cases} \rightarrow \begin{vmatrix} 1 & 2 & 0 \\ 0 & 1 & 1 \\ 3 & 2 & 2 \end{vmatrix} \mid \begin{matrix} 1 \cdot 2 \cdot 1 = 2 \\ 0 \cdot 1 \cdot 2 = 0 \\ 3 \cdot 2 \cdot 2 = 12 \end{matrix}$$

$$5 - 2 - 3C$$

$$8 - 2 - 3C$$

$$\boxed{D = 6 - 3C}$$

$$\begin{matrix} 1s(3 \cdot 1 \cdot 0) = 3 \\ 2s(2 \cdot 1 \cdot 1) = 2 \\ 3s(2 \cdot 0 \cdot 2) = 0 \end{matrix} \left. \vphantom{\begin{matrix} 1s \\ 2s \\ 3s \end{matrix}} \right\} 6$$

$$B) \begin{pmatrix} 1 & 2 & 0 & 1 \\ 0 & 1 & 1 & 2 \\ 3 & 2 & 2 & -1 \end{pmatrix} \sim \begin{pmatrix} -1 & -1 & 1 & 1 \\ 2 & 0 & 2 & -2 \end{pmatrix} \mid \begin{matrix} 1 \\ 1 \\ -4 \end{matrix}$$

$$-2 - 1 = -3 \quad (-1)$$

$$0 = 4 - 2$$

$$0 = 4/2 = \boxed{2}$$

$$V = \{(C \in \mathbb{R} \mid C = 2)\}$$

$$V. \begin{cases} X - Y + Z = 6 \\ 2X + Y - Z = -3 \\ X + 2Y - Z = -5 \end{cases} \rightarrow \begin{cases} \begin{vmatrix} 1 & -1 & 1 \\ 2 & 1 & -1 \\ 1 & 2 & -1 \end{vmatrix} \begin{vmatrix} 1 & -1 \\ 2 & 1 \\ 1 & 2 \end{vmatrix} & \begin{matrix} 1_D (1, 1, 1) = -1 \\ 2_D (-1, (-1), 1) = 1 \\ 3_D (1, 2, 2) = 4 \end{matrix} \\ & \begin{matrix} 1_S (1, 1, 1) = 1 \\ 2_S (2, (-1), 1) = -2 \\ 3_S (-1, 2, (-1)) = 2 \end{matrix} \end{cases} \begin{matrix} 4 \\ 1 \end{matrix}$$

$$D_x = \begin{cases} \begin{vmatrix} 6 & -1 & 1 \\ -3 & 1 & -1 \\ -5 & 2 & -1 \end{vmatrix} \begin{vmatrix} 6 & -1 \\ -3 & 1 \\ -5 & 2 \end{vmatrix} & \begin{matrix} 1_D (6, 1, (-1)) = -6 \\ 2_D (-1, (-1), (-5)) = -5 \\ 3_D (1, (-3), 2) = -6 \end{matrix} \\ & \begin{matrix} 1_S ((-5), 1, 1) = -5 \\ 2_S (2, (-1), 6) = -12 \\ 3_S ((-1), (-3), (-1)) = -3 \end{matrix} \end{cases} \begin{matrix} -17 \\ \frac{3}{5} \\ -20 \end{matrix}$$

$$D_y = \begin{cases} \begin{vmatrix} 1 & 6 & 1 \\ 2 & -3 & -1 \\ 1 & -5 & -1 \end{vmatrix} \begin{vmatrix} 1 & 6 \\ 2 & -3 \\ 1 & -5 \end{vmatrix} & \begin{matrix} 1_D (1, (-3), (-1)) = 3 \\ 2_D (6, (-1), 1) = -6 \\ 3_D (1, 2, (-5)) = -10 \end{matrix} \\ & \begin{matrix} 1_S (1, (-3), 1) = -3 \\ 2_S ((-5), (-1), 1) = 5 \\ 3_S ((-1), 2, 6) = -12 \end{matrix} \end{cases} \begin{matrix} -13 \\ -3 \\ 3 \end{matrix}$$

$$D_2 = \left| \begin{array}{ccc|cc} 1 & -1 & 6 & 1 & -1 \\ 2 & 1 & -3 & 2 & 1 \\ 1 & 2 & -5 & 1 & 2 \end{array} \right| \begin{array}{l} 1_p (1 \cdot 1 \cdot (-5)) = -5 \\ 2_p ((-1) \cdot (-3) \cdot 1) = 3 \\ 3_p (6 \cdot 2 \cdot 2) = 24 \end{array} \left. \begin{array}{l} 22 \\ 15 \end{array} \right\} \frac{12}{3} = -4$$

$$\begin{array}{l} 1_s (1 \cdot 1 \cdot 6) = 6 \\ 2_s (2 \cdot (-3) \cdot 1) = -6 \\ 3_s ((-5) \cdot (-3) \cdot 1) = 15 \end{array}$$

$$1 \cdot (-1) \cdot 4 = -4 \text{ (LETRA "B")}$$

$$VI - \begin{cases} 1X + 1Y + 1Z \\ KX + 1Y + 1Z \\ 1X + 1Y - 1Z \end{cases} \begin{matrix} \xrightarrow{R_1} \\ \xrightarrow{R_2} \\ \xrightarrow{R_3} \end{matrix} \begin{pmatrix} 1 & 1 & 1 & | & K \\ K & 1 & 1 & | & 1 \\ 1 & 1 & -1 & | & K \end{pmatrix} \xrightarrow{R_2 - R_1, R_3 - R_1} \begin{pmatrix} 0 & 0 & 2 & | & 0 \\ K-1 & 0 & 2 & | & 1-K \end{pmatrix}$$

$$(K-1 \ 0 \ 0 \ : \ 1-K) \quad K-1 = 1-K$$

$$2K = 2$$

$$K = 2/2 \quad K = 1 \text{ (LETRA "D")}$$

$$\text{VII. } \begin{cases} x + y + z = 1 \\ m^2x - 2y + 4z = 5 \\ m^2x + 4y + 16z = 25 \end{cases} \rightarrow \begin{pmatrix} 1 & 1 & 1 & | & 1 \\ m & -2 & 4 & | & 5 \\ m & 4 & 16 & | & 25 \end{pmatrix} \xrightarrow{R_2 - R_1, R_3 - R_1} \begin{pmatrix} 1 & 1 & 1 & | & 1 \\ 0 & -3 & 3 & | & 4 \\ 0 & 3 & 15 & | & 24 \end{pmatrix} \xrightarrow{R_3 + R_2} \begin{pmatrix} 1 & 1 & 1 & | & 1 \\ 0 & -3 & 3 & | & 4 \\ 0 & 0 & 18 & | & 28 \end{pmatrix}$$

$$0,5m^2 + m + 12 - 17,5 = 0$$

$$0,5m^2 + m - 5,5 = 0$$

$$\Delta = 1^2 - 4 \cdot 0,5 \cdot 5,5$$

$$\Delta = 1 - 11$$

$$\Delta = -10$$

$$x = \frac{-1 \pm \sqrt{-10}}{2 \cdot 0,5} = \frac{-1 \pm 3,5}{1} = 2,5 \text{ m}_2$$

$$x = \frac{-1 - 3,5}{1} = -4,5 \text{ m}_1$$

$$-4,5 + 2,5$$

$$(-1) \quad 4,5 - 2,5 = \boxed{2} \text{ (LETRA "B")}$$