

Tarefa Bônus 1

01 -
$$\begin{cases} Cx + 4y = 1 \\ x + 2y = B \end{cases}$$

$$D = \begin{vmatrix} C & 4 \\ 1 & 2 \end{vmatrix} = 2C - 4 = 0$$

$$2C = 4$$

$$C = \frac{4}{2}$$

$$C = 2$$

2.
$$\left(\begin{array}{cc|c} 2 & 4 & 1 \\ 1 & 2 & B \end{array} \right) \sim \left(\begin{array}{cc|c} 0 & 0 & 2B \end{array} \right)$$

$$0 = 2B$$

indeterminado

Letra B $\rightarrow C = 2$ Pode ser indeterminado.

02 -
$$\begin{cases} x + ky = 1 \\ kx + y = 1 - k \end{cases}$$

$$D = \begin{vmatrix} 1 & k \\ k & 1 \end{vmatrix} = 1 - k^2$$

1.
$$\left(\begin{array}{cc|c} 1 & k & 1 \\ k & 1 & 1 - k \end{array} \right) \sim \left(\begin{array}{cc|c} 1 - k & k - 1 & k \\ 1 - k & k - 1 & -1 \end{array} \right)$$

I = Falso

$$1 - k + k - 1 = k$$

II = Falso

$$0 = k$$

III = Falso, tem diversas soluções

indeterminado

Letra D

03 -
$$\begin{cases} x + 2y + cz = 1 \\ y + z = 2 \\ 3x + 2y + 2z = -1 \end{cases}$$

A)
$$\begin{vmatrix} 1 & 2 & c \\ 0 & 1 & 1 \\ 3 & 2 & 2 \end{vmatrix}$$

C =
$$\begin{vmatrix} 0 & 1 & 1 \\ 0 & 1 & 1 \end{vmatrix} = 0 - 1 = -1$$

$$\det A = 6 - 3C$$

B)
$$\left(\begin{array}{ccc|c} 1 & 2 & c & 1 \\ 0 & 1 & 1 & 2 \\ 3 & 2 & 2 & -1 \end{array} \right) \sim \left(\begin{array}{ccc|c} -1 & -1 & 1 - c & 1 \\ 2 & 0 & 2 - c & -2 \\ 0 & -2 & -1c & -4 \end{array} \right)$$

$$-2 - 1c = -4 \quad (-1)$$

$$C = 4 - 2$$

$$C = 2$$

$$V = \{ C \in \mathbb{R} / C = 2 \}$$

$$04 - \begin{cases} x - y = k \\ 12x - ky + z = 1 \\ 36x + kz = 2 \end{cases}$$

$$\left[\begin{array}{ccc|c} 1 & -1 & 0 & k \\ 12 & -k & 1 & 1 \\ 36 & 0 & k & 2 \end{array} \right] \xrightarrow{R_2 - R_1} \left[\begin{array}{ccc|c} 1 & -1 & 0 & k \\ 0 & 3k - 3k & 1 & -1 + k \\ 0 & 3k & k & -1 + k \end{array} \right]$$

$$3k - 1 - 3k = -1 + k$$

$0 = k$
indeterminate

$$05 - \begin{cases} x - y + z = 6 \\ 2x + y - z = -3 \\ x + 2y - z = -5 \end{cases}$$

$$D = \begin{vmatrix} 1 & -1 & 1 \\ 2 & 1 & -1 \\ 1 & 2 & -1 \end{vmatrix} = 1(-1-1) = -2$$

$$D_x = \begin{vmatrix} 6 & -1 & 1 \\ -3 & 1 & -1 \\ -5 & 2 & -1 \end{vmatrix} = 6(-1-1) = -12$$

$x, y, z = ?$

$$D_y = \begin{vmatrix} 1 & 6 & 1 \\ 2 & -3 & -1 \\ 1 & -5 & -1 \end{vmatrix} = 1(-3+1) = -2$$

$$1 \cdot -1 \cdot 4 = -4$$

B

$$D_z = \begin{vmatrix} 1 & -1 & 6 \\ 2 & 1 & -3 \\ 1 & 2 & -5 \end{vmatrix} = 1(-5-1) = -6$$

$$-5 + 3 + 24$$

$$06 - \begin{cases} x+y+z=K \\ Kx+y+z=1 \\ x+y-z=K \end{cases}$$

$$\rightarrow \begin{pmatrix} 1 & 1 & 1 & K \\ K & 1 & 1 & 1 \\ 1 & 1 & -1 & K \end{pmatrix} \xrightarrow{1.} \begin{pmatrix} 1 & 1 & 1 & K \\ K-1 & 0 & 0 & 1-K \\ 0 & 0 & 2 & 0 \end{pmatrix} \sim \begin{pmatrix} 1 & 1 & 1 & K \\ K-1 & 0 & 0 & 1-K \\ 0 & 0 & 2 & 0 \end{pmatrix} \sim \begin{pmatrix} 1 & 1 & 0 & 1-K \\ K-1 & 0 & 0 & 1-K \\ 0 & 0 & 2 & 0 \end{pmatrix}$$

$$K-1=1-K$$

$$2K=2$$

$$K=1$$

(D)

$$07 - \begin{cases} x+y+z=1 \\ mx-2y+4z=5 \\ m^2x+4y+16z=25 \end{cases}$$

$$D = \begin{vmatrix} 1 & 1 & 1 \\ m & -2 & 4 \\ m^2 & 4 & 16 \end{vmatrix}$$

$$-32 + 4m^2 + 4m$$

$$-32 + 4m^2 + 4m - (-2m^2 + 16 + 16m) = 0$$

$$-32 + 4m^2 + 4m + 2m^2 - 16 - 16m = 0$$

$$-48 + 6m^2 - 12m = 0 \div 6$$

$$8 - m^2 + 2m = 0 \cdot (-1)$$

$$m^2 - 2m - 8 = 0$$

$$\Delta = B^2 - 4 \cdot a \cdot c = 0$$

$$\Delta = (-2)^2 - 4 \cdot 1 \cdot -8$$

$$\Delta = 4 + 32$$

$$\Delta = \sqrt{36}$$

$$\Delta = 6$$

$$\Delta = 12$$

$$m = \frac{2 \pm 6}{2} = m$$

$$m_1 = 4$$

$$m_2 = -4,5$$

$$m_3 = -2$$

$$m_4 = 2,5$$

$$m_1 + m_2 = 0$$

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

(B)

Tarefa Básica 2

$$01 - \begin{bmatrix} 1 & 7 \\ 7 & 1 \end{bmatrix}_{2 \times 2} \cdot \begin{bmatrix} x \\ y \end{bmatrix}_{2 \times 1} = k \begin{bmatrix} x \\ y \end{bmatrix}$$

$$\begin{bmatrix} 1 & 7 \\ 7 & 1 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \end{bmatrix} = k \begin{bmatrix} x \\ y \end{bmatrix}$$

$$\begin{bmatrix} dx \\ dy \end{bmatrix} = \begin{bmatrix} kx \\ ky \end{bmatrix}$$

Se $k=8$, é possível.

(E)

$$02 - \begin{cases} 3x + 4y - z = 0 \\ 2x - y + 3z = 0 \\ x + y = 0 \end{cases}$$

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

$$1+9+0$$

$$0+12+2$$

$$DX = \begin{array}{ccc|cc} 0 & 4 & -1 & 0 & 4 \\ 0 & -1 & 3 & 0 & -1 \\ 0 & 1 & 0 & 0 & 1 \end{array} = \frac{0}{0} \leftarrow \text{infinitas soluções}$$

$$DY = \begin{array}{ccc|cc} 3 & 0 & -1 & 3 & 0 \\ 2 & 0 & 3 & 2 & 0 \\ 1 & 0 & 0 & 1 & 0 \end{array} = \frac{0}{0} \leftarrow \text{infinitas soluções}$$

$$DZ = \begin{array}{ccc|cc} 3 & 4 & 0 & 3 & 4 \\ 2 & -1 & 0 & 2 & -1 \\ 1 & 1 & 0 & 1 & 1 \end{array} = \frac{0}{0} \leftarrow \text{infinitas soluções}$$

(D)

03 -
$$\begin{cases} x + y + z = 0 \\ kx + 3y + 4z = 0 \\ x + ky + 3z = 0 \end{cases} \rightarrow \begin{pmatrix} 1 & 1 & 1 & 0 \\ k & 3 & 4 & 0 \\ 1 & k & 3 & 0 \end{pmatrix} \xrightarrow{R_2 - R_1, R_3 - R_1} \begin{pmatrix} 1 & 1 & 1 & 0 \\ k-5 & k-3 & 3 & 0 \\ 0 & k-2 & 2 & 0 \end{pmatrix}$$

$$\begin{pmatrix} k-5 & k-3 & 2 & 0 \end{pmatrix}$$

$$k-5 + k-3 + 2 = 0$$

$$2k = 5 + 3 - 2$$

$$2k = 6$$

$$k = 3$$

$$k = 3$$

$$k + k = ?$$

$$3,5 + 3,5 = 7$$

(D)

$$k = 3,5$$

04 -
$$\begin{cases} x + kz = 0 \\ kx + y = 0 \\ x + ky = 0 \end{cases}$$

$$k \neq 0$$

$$\xrightarrow{k=1} \begin{pmatrix} 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 \end{pmatrix} \xrightarrow{R_2 - R_1, R_3 - R_1} \begin{pmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

k não pode ser 1, $k \neq 1$

$$k = -1 \rightarrow \begin{pmatrix} 1 & 0 & -1 & 0 \\ -1 & 1 & 0 & 0 \\ 1 & -1 & 0 & 0 \end{pmatrix} \xrightarrow{R_2 + R_1, R_3 - R_1} \begin{pmatrix} 1 & 0 & -1 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

k não pode ser -1, $k \neq -1$

$$V = \{k \in \mathbb{R} / k \neq 0, k \neq 1, k \neq -1\}$$

(A)

Q5-

$$-x + 2y - 3 = 0$$

$$3x - y + 3 = 0$$

$$2x - 4y + 6 = 0$$

$$3x - y + 3 = 0$$

$$-y = -3x - 3 \cdot (-1) = 3x + 3$$

$$y = 3x + 3$$

$$-x + 2y - 3 = 0$$

$$-x + 2(3x + 3) - 3 = 0$$

$$-x + 6x + 6 - 3 = 0$$

$$5x = -6 + 3$$

$$5x = -3$$

$$x = \frac{-3}{5}$$

↑
determinado

$$y = 3x + 3$$

$$y = 3 \cdot \left(\frac{-3}{5}\right) + 3$$

$$y = -\frac{9}{5} + 3$$

$$y = -\frac{9}{5} + \frac{15}{5}$$

$$5y = -9 + 15$$

$$5y = 6$$

$$y = \frac{6}{5}$$

$$y = \frac{6}{5}$$

↖ determinado

$$S = \left\{ x = \frac{-3}{5}; y = \frac{6}{5} \right\}$$

(B)