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SALA: 317

MATEMATICA

SEMANA 7

PARTE 1

Parte 1

① $\begin{cases} ax + 4y = 1 \\ x + 2y = b \end{cases}$ $D = \begin{vmatrix} a & 4 \\ 1 & 2 \end{vmatrix} = 2a - 4$

Se caso A for 2, sera indeterminante, pois sua determinante sera nula.

R: (B)

② $\begin{cases} x + Ky = 1 \\ Kx + y = 1 - K \end{cases}$ $D = \begin{vmatrix} 1 & K \\ K & 1 \end{vmatrix} = K - K = 0$

$Dx = \begin{vmatrix} 1 & K \\ 1-K & 1 \end{vmatrix} = 1 - 1 - 2K = 2K$ $\quad x = \frac{2K}{0}$

$Dy = \begin{vmatrix} 1 & 1 \\ K & 1-K \end{vmatrix} = 1 - K - K = 1 - 2K$ $\quad y = \frac{1-2K}{0}$

I) falso
II) falso
III) falso

R: (D)

③ $\begin{cases} x + 2y + cz = 1 \\ y + z = 2 \\ 3x + 2y + 2z = -1 \end{cases}$ a) $\begin{vmatrix} 1 & 2 & c \\ 0 & 1 & 1 \\ 3 & 2 & 2 \end{vmatrix}$

a) $D = \begin{vmatrix} 1 & 2 & c \\ 0 & 1 & 1 \\ 3 & 2 & 2 \end{vmatrix} \begin{matrix} 1 & 2 \\ 0 & 1 \\ 3 & 2 \end{matrix}$ $D = 8 - (3c + 2)$

$2 + 6 = 8$ $\quad 3c + 2$

$D = 6 - 3c$

b) $6 - 3c \neq 0$

$-3c \neq -6$

$c \neq \frac{-6}{3}$

$c \neq -2$

b) $S = \{c \in \mathbb{R} - \{2\}\}$

④ $\begin{cases} x - y = k \\ 12x - ky + z = 1 \\ 36x + kz = 2 \end{cases}$ $D = \begin{vmatrix} 1 & -1 & 0 \\ 12 & -k & 1 \\ 36 & 0 & k \end{vmatrix}$

$D = \begin{vmatrix} 1 & -1 & 0 \\ 12 & -k & 1 \\ 36 & 0 & k \end{vmatrix} \begin{matrix} 1 & -1 \\ 12 & -k \\ 36 & 0 \end{matrix}$ $D = -k^2 + 36 - 12k$

$-12k$

$-k^2 - 36 = -k^2 - 36$

$\Delta = b^2 - 4a \cdot c$

$\Delta = (-12)^2 - 4 \cdot 1 \cdot -36$

$\Delta = 144 - 144$

$\Delta = 0$

$x = \frac{-b \pm \sqrt{\Delta}}{2a}$

$x = \frac{-12}{2 \cdot -1} = \frac{12}{-2} = -6$

R: (E)

⑤

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

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

$$D = \begin{vmatrix} 1 & -1 & 1 & 1 & -1 \\ 2 & 1 & -1 & 2 & 1 \\ 1 & 2 & -1 & 1 & 2 \end{vmatrix} \qquad -2+2+1$$

$$-2+1+4=4$$

$$D = 4-1$$

$$D = 3$$

$$-6+6+10=10$$

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

$$-5+3+24=20$$

$$D_z = 22-10$$

$$D_z = 12$$

$$z = \frac{12}{3} = 4$$

$$\begin{cases} x - y + z = 6 \\ 2x + y - z = -3 \\ 3y - 2z = -11 \end{cases}$$

$$3y - 2.(4) = -11$$

$$3y - 8 = -11$$

$$y = \frac{-3}{3}$$

$$y = -1$$

$$x + 1 + 4 = 6$$

$$x + 5 = 6$$

$$x = 6 - 5$$

$$x = 1$$

R: (B)

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

$$D = \begin{vmatrix} 1 & 1 & 1 & 1 & 1 \\ K & 1 & 1 & K & 1 \\ 1 & 1 & -1 & 1 & 1 \end{vmatrix}$$

$-1+1+K-K$

$1+1-K-2K$

$D = K-2+K$

$2K-2$

$2(K-1)$

$D=0$

$K=1$

$x+y+z=1$

$-(x+y-z=K)$

$0+0+2z=0$

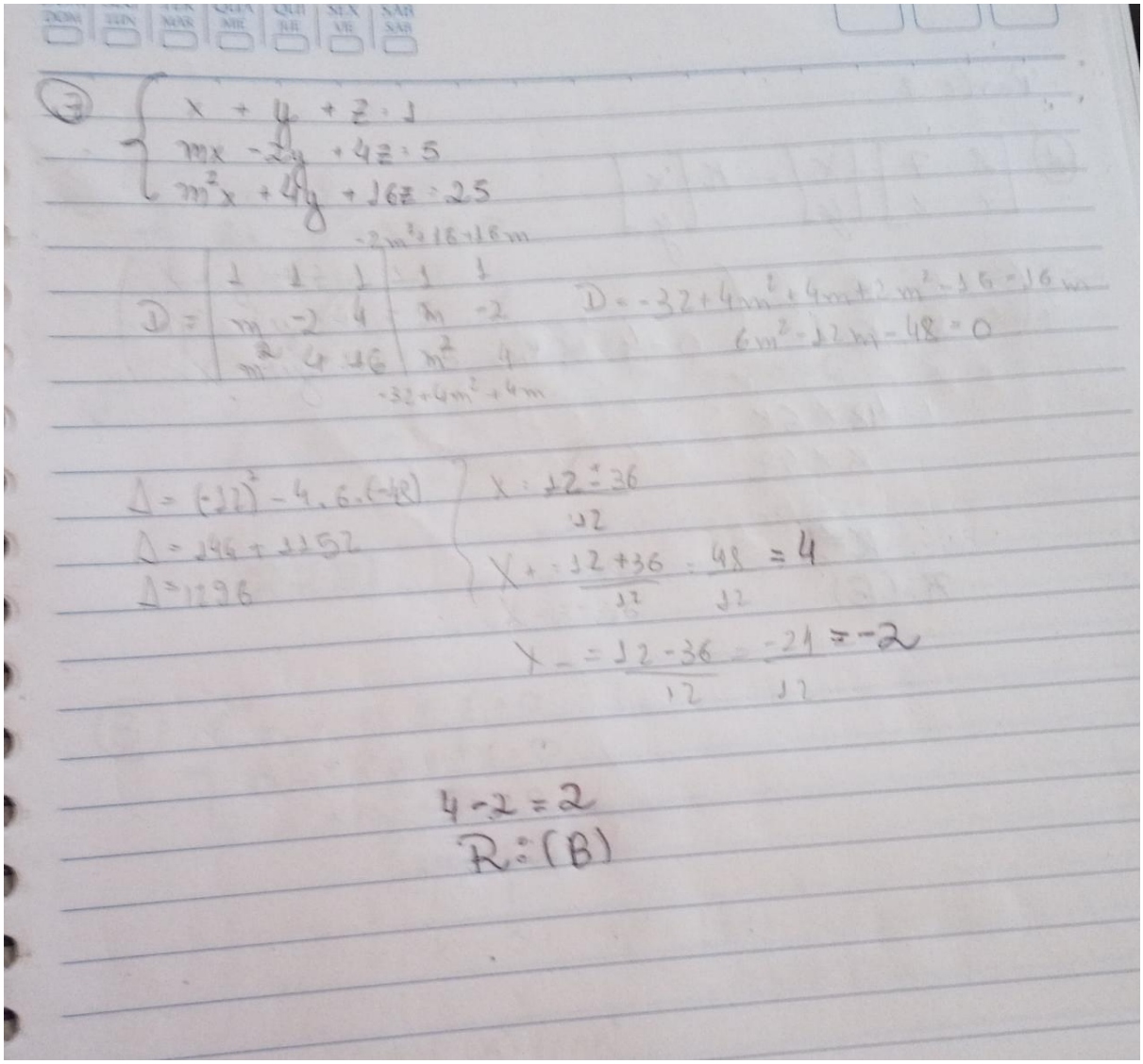
$z=0$

$x+y=1$

$x=1-y$

$K=1 \ (1-y, y, 0)$

$R:(D)$


7)
x + y + z = 1
mx − 2y + 4z = 5
m²x + 4y + 16z = 25
D = -32 + 4m² + 4m + 2m² − 16 − 16m
6m² − 12m − 48 = 0
Δ = (−12)² − 4.6.(−48)
Δ = 144 + 1152
Δ = 1296
4 − 2 = 2
R: (B)

PARTE 2

Parte 2

(11) $\begin{bmatrix} 1 & 7 \\ 7 & 1 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \end{bmatrix} = K \begin{bmatrix} x \\ y \end{bmatrix}$

$-7 \cdot \left(\begin{array}{cc|c} 1 & 7 & K \\ 7 & 1 & K \end{array}\right) \sim \left(\begin{array}{cc|c} & & \\ 0 & -48 & 1-6K \end{array}\right)$

$48 \neq 6K$

$K \neq \frac{48}{6}$

$K \neq 8$

R.: (E)

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

$1 + 9 = 10$

D =	3	4	-1	3	4
	2	-1	3	2	-1
	1	1	0	1	1

$12 - 2 = 10$

$D = 10 - 10 = 0$

$R = (D)$

③ $\begin{cases} x + y + z = 0 \\ Kx + 3y + 4z = 0 \\ x + Ky + 3z = 0 \end{cases}$

$3 + 4K + 3K = 3 + 7K$

D =	1	1	1	1	1
	K	3	4	K	3
	1	K	3	1	K

$9 + 4 + K^2 = 13 + K^2$

$D = 13 + K^2 - (3 + 7K)$

$K^2 - 7K + 10$

$\Delta = (-7)^2 - 4 \cdot 1 \cdot 10$

$\Delta = 49 - 40$

$\Delta = 9$

$x = \frac{-(-7) \pm \sqrt{9}}{2 \cdot 1}$

$x_1 = \frac{7 + 3}{2} = \frac{10}{2} = 5$

$x_2 = \frac{7 - 3}{2} = \frac{4}{2} = 2$

$5 + 2 = 7$

$R = (D)$

④ $\begin{cases} x + kz = 0 \\ kx + y = 0 \\ x + ky = 0 \end{cases}$

$$D = \begin{vmatrix} 1 & 0 & k \\ k & 1 & 0 \\ 1 & k & 0 \end{vmatrix} \begin{matrix} 1 & 0 \\ k & 1 \\ 1 & k \end{matrix}$$

k^3

$D = k^3 - k$

$k(k-1)\cdot(k+1) \neq 0$

$k \neq -1 ; k \neq 0 ; k \neq 1$

R: (A)

⑤ $\begin{cases} -x + 2y - 3 = 0 \\ 3x - y + 3 = 0 \\ 2x - 4y + 6 = 0 \end{cases}$

$6 + 12 + 36 = 54$

$$D = \begin{vmatrix} -1 & 2 & -3 \\ 3 & -1 & 3 \\ 2 & -4 & 6 \end{vmatrix} \begin{matrix} -1 & 2 \\ 3 & -1 \\ 2 & -4 \end{matrix}$$

$D = 54 - 54$

$D = 0$

$6 + 12 + 36 = 54$

R: (B)