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SALA: 317

MATEMATICA

SEMANA 6

PARTE 1

Parte 1

(f) a) $\begin{cases} 2x - y = 2 \\ -x + 3y = -3 \end{cases}$ $D = \begin{vmatrix} 2 & -1 \\ -1 & 3 \end{vmatrix} = 6 - 1 = 5$

$x = \frac{3}{5}$ $D_x = \begin{vmatrix} 2 & -1 \\ -3 & 3 \end{vmatrix} = 6 - 3 = 3$

$y = \frac{-4}{5}$ $D_y = \begin{vmatrix} 2 & 2 \\ -1 & -3 \end{vmatrix} = -6 - (-2) = -4$

$R = \{(\frac{3}{5}, \frac{4}{5})\}$

b) $\begin{cases} 3x - y + z = 1 \\ 2x + 3z = -1 \\ 4x + y - 2z = 7 \end{cases}$ $D = \begin{vmatrix} 3 & -1 & 1 \\ 2 & 0 & 3 \\ 4 & 1 & -2 \end{vmatrix}$ $0 + 9 + 4 = 13$

$0 - 12 + 2 = -10$

$D = -10 - 13 = -23$

$D_x = \begin{vmatrix} 1 & -1 & 1 \\ -1 & 0 & 3 \\ 7 & 1 & -2 \end{vmatrix}$ $0 + 3 - 2 = 1$

$D_x = -22 - 1 = -23$ $x = \frac{-23}{-23} = 1$

$D_y = \begin{vmatrix} 3 & 1 & 1 \\ 2 & -1 & 3 \\ 4 & 7 & -2 \end{vmatrix}$ $-4 + 63 = 59$

$+6 + 12 + 14 = 32$

$D_y = 32 - 55 = -23$ $y = \frac{-23}{-23} = 1$

$D_z = \begin{vmatrix} 3 & -1 & 1 \\ 2 & 0 & -1 \\ 4 & 1 & 7 \end{vmatrix}$ $0 - 3 - 14 = -17$

$0 + 4 + 2 = 6$

$D_z = 6 - (-17) = 23$ $z = \frac{-23}{23} = -1$

$R = \{(1, 1, -1)\}$

② $\begin{cases} 3x + 4y - z = 1 \\ 4x + 5y + 2z = 12 \\ x - 2y + 3z = 8 \end{cases}$

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

$45 + 8 + 8 = 61$

$-12 + 48 + 12 = 48$

$D = 61 - 31 = 30$

$D_y = \begin{vmatrix} 3 & 1 & -1 & 3 & 1 \\ 4 & 12 & 2 & 4 & 12 \\ 1 & 8 & 3 & 1 & 8 \end{vmatrix}$

$108 + 2 - 32 = 78$

$y = \frac{30}{30} = 1$

$Dy = 78 - 48 = 30$

R: A = 1

③ Se (a, b, c) é a solução do sistema

$\begin{cases} x - 2y + z = 1 \\ 3x + y - 11z = -2 \\ 2x + 3y - z = 1 \end{cases}$ então a + b + c é

Se (a, b, c) são o resultado então

a + b + c → 1 - 2 + 1 = 0

R: C: 0

④ $\begin{cases} x + 2y - 3z = 29 \\ x + 3y + 2z = 4 \\ x - y - 2z = 8 \end{cases}$

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

$-9 - 2 - 4 = -15$

$-6 + 4 + 3 = 1$

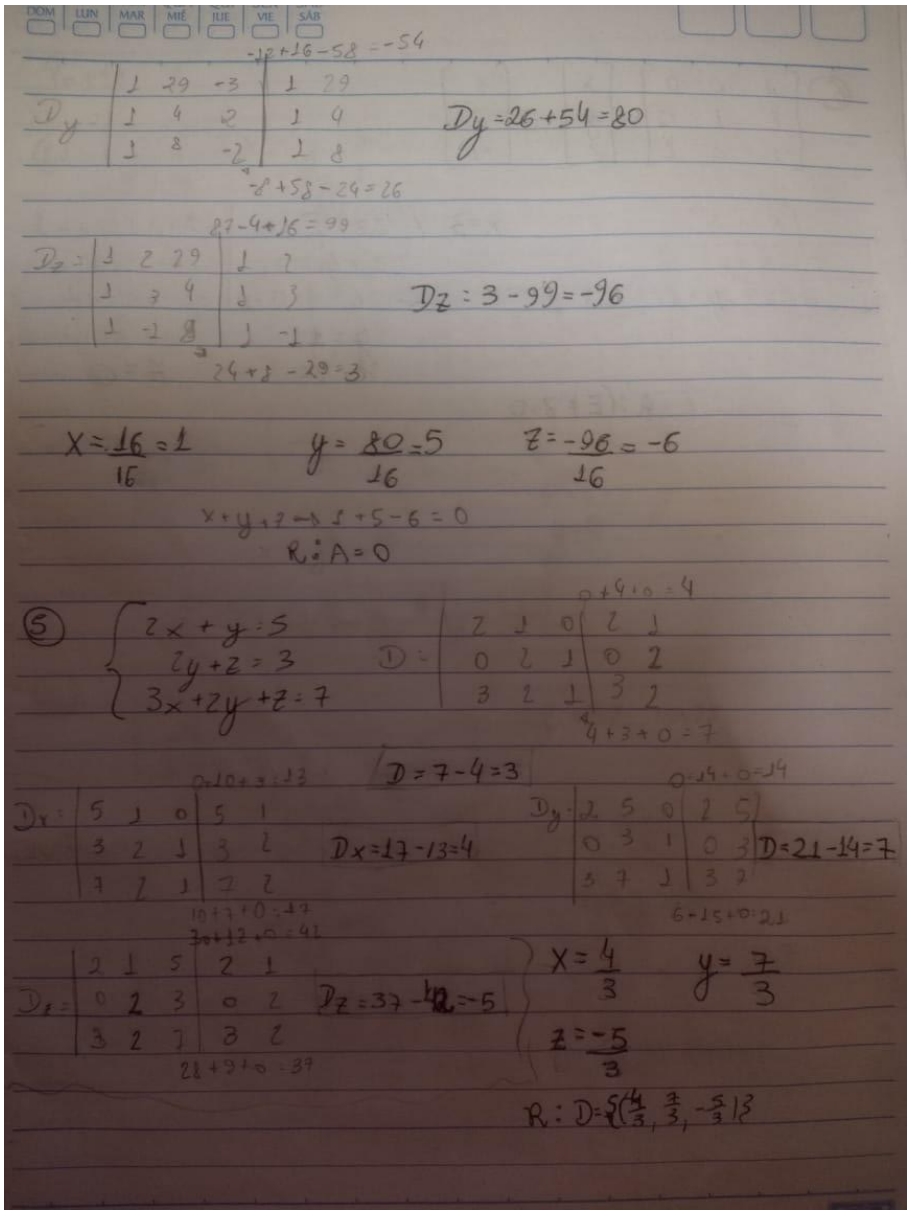
$D = 1 - (-15) = 16$

$-72 - 58 - 16 = -146$

$Dx = \begin{vmatrix} 29 & 2 & -3 & 29 & 2 \\ 4 & 3 & 2 & 4 & 3 \\ 8 & -1 & -2 & 8 & -1 \end{vmatrix}$

$Dx = -130 + 146 = 16$

$-174 + 32 + 12 = -130$


-12+16-58=-54
Dy
1 29 -3 | 1 29
1 4 2 | 1 4
1 8 -2 | 1 8
-8+58-24=26
Dy=26+54=80
27-4+16=99
Dz
1 2 29 | 1 2
1 3 4 | 1 3
1 -1 8 | 1 -1
24+8-29=3
Dz=3-99=-96
X=16/16=1
y=80/16=5
z=-96/16=-6
x+y+z=1+5-6=0
R: A=0
⑤
2x+y=5
2y+z=3
3x+2y+z=7
D
2 1 0 | 2 1
0 2 1 | 0 2
3 2 1 | 3 2
0+4+0=4
4+3+0=7
D=7-4=3
Dx
5 1 0 | 5 1
3 2 1 | 3 2
7 2 1 | 7 2
0+10+7=17
Dx=17-13=4
Dy
2 5 0 | 2 5
0 3 1 | 0 3
3 7 1 | 3 7
0+14+0=14
6+15+0=21
D=21-14=7
Dz
2 1 5 | 2 1
0 2 3 | 0 2
3 2 7 | 3 2
10+7+0=17
30+12+0=42
21+9+0=37
Dz=37-42=-5
X=4/3
y=7/3
z=-5/3
R: D={4/3, 7/3, -5/3}

DOM SEG TER QUA QUI SEX SÁB
DOM LUN MAR MIÉ JUE VIE SÁB

⑥ $\begin{bmatrix} 1 & 0 & 0 \\ 2 & 1 & 2 \\ -1 & 2 & 2 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 3 \\ 7 \\ -1 \end{bmatrix}$

$\begin{cases} x = 3 \\ 2x + y = 7 \\ -x + 2y + 2z = -1 \end{cases}$

$x = 3$ / $2.3 + y = 7$

$6 + y = 7$

$y = 7 - 6 = 1$

$y = 1$

$-3 + 2.1 + 2z = -1$

$-3 + 2 + 2z$

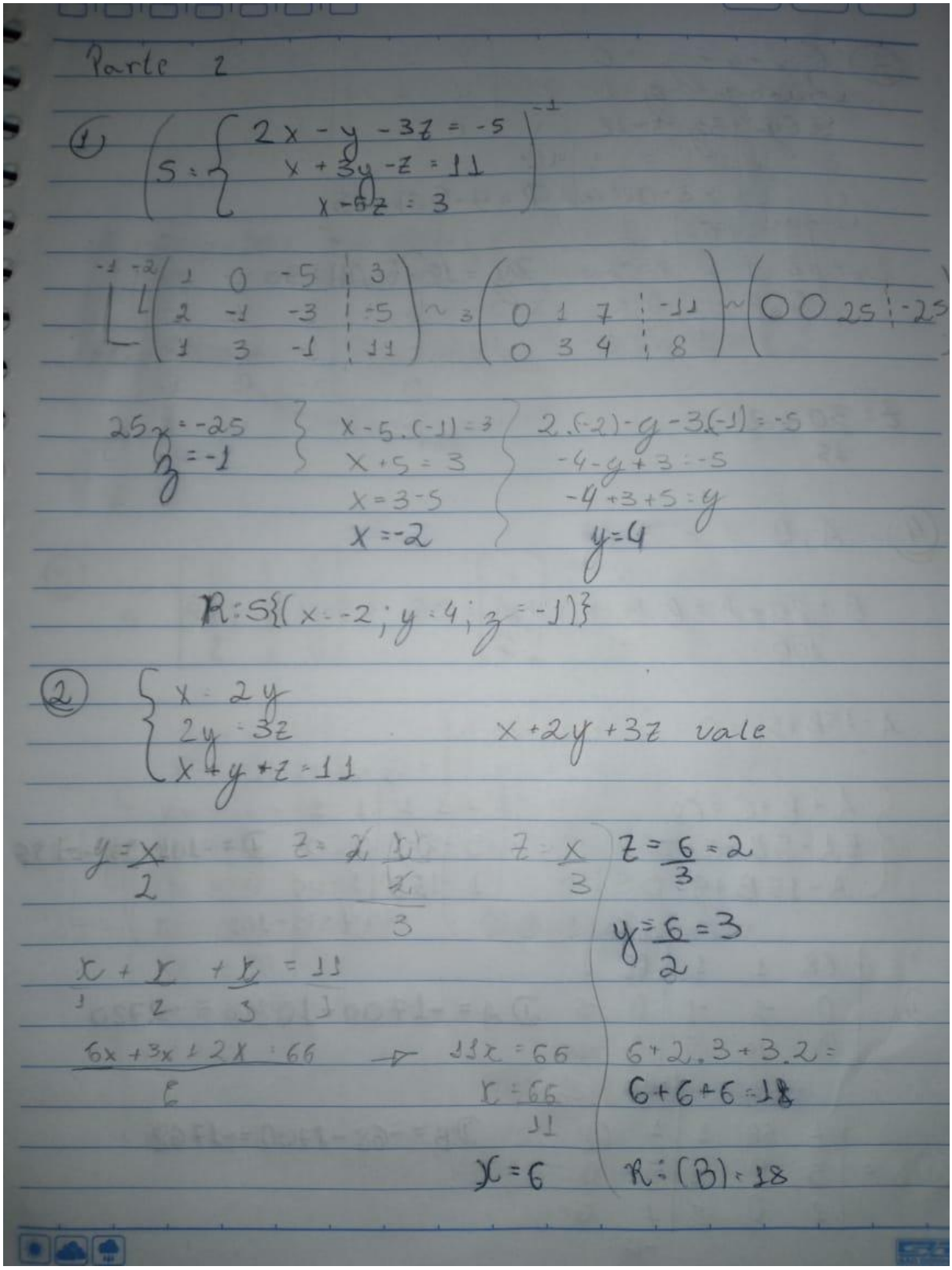
$-1 + 2z = -1$

$2z = 1 - 1 = 0$

$z = 0$

R: (E) $z = 0$

PARTE 2


Parte 2
① S = { 2x - y - 3z = -5 ; x + 3y - z = 11 ; x - 5z = 3 }^-1
25z = -25
z = -1
x - 5.(-1) = 3
x + 5 = 3
x = 3 - 5
x = -2
2.(-2) - y - 3(-1) = -5
-4 - y + 3 = -5
-4 + 3 + 5 = y
y = 4
R: S{(x = -2; y = 4; z = -1)}
② { x = 2y ; 2y = 3z ; x + y + z = 11
x + 2y + 3z vale
y = x/2
z = x/3
x + x/2 + x/3 = 11
6x + 3x + 2x = 66
11x = 66
x = 66/11
x = 6
z = 6/3 = 2
y = 6/2 = 3
6 + 2.3 + 3.2 =
6 + 6 + 6 = 18
R: (B) = 18

③ $\begin{cases} x+y+z=0 \\ 2x-y-2z=1 \\ 6y+3z=-12 \end{cases}$

$D = \begin{vmatrix} 1 & 1 & 1 \\ 2 & -1 & -2 \\ 0 & 6 & 3 \end{vmatrix}$ $\begin{matrix} 1 & 1 \\ 2 & -1 \\ 0 & 6 \end{matrix}$ $-3+0+12=9$

$D = 9-(-6) = 15$

$D_z = \begin{vmatrix} 1 & 1 & 0 \\ 2 & -1 & 1 \\ 0 & 6 & -12 \end{vmatrix}$ $\begin{matrix} 1 & 1 \\ 2 & -1 \\ 0 & 6 \end{matrix}$ $6-24=-18$

$D_z = 12-(-18) = 30$

$z = \frac{30}{15} = 2$

④ A, B e $C = 68$

$\frac{B+20}{100} = A = B \cdot B \rightarrow \frac{C+A}{5} = 3B \rightarrow 5C+A = 15B$

$A-15B+5C=0$

$\begin{cases} A+B+C=68 \\ 5A-5B-C=0 \\ A-15B+5=0 \end{cases}$

$D = \begin{vmatrix} 1 & 1 & 1 \\ 5 & -5 & -1 \\ 1 & -15 & 5 \end{vmatrix}$ $\begin{matrix} 1 & 1 \\ 5 & -5 \\ 1 & -15 \end{matrix}$ $-5+15+25=35$

$-25-1-75=-101$

$D = -101-35 = -136$

$D_A = \begin{vmatrix} 68 & 1 & 1 \\ 0 & -5 & -1 \\ 0 & -15 & 5 \end{vmatrix}$ $\begin{matrix} 68 & 1 \\ 0 & -5 \\ 0 & -15 \end{matrix}$ -1700 1020

$D_A = -1700-1020 = -2720$

$D_B = \begin{vmatrix} 1 & 68 & 1 \\ 5 & 0 & -1 \\ 1 & 0 & 5 \end{vmatrix}$ $\begin{matrix} 1 & 68 \\ 5 & 0 \\ 1 & 0 \end{matrix}$ 1700

$D_B = -68-1700 = -1768$

$$D_C = \begin{vmatrix} 1 & 1 & 68 \\ 5 & -5 & 0 \\ 1 & -15 & 0 \end{vmatrix} \quad \begin{matrix} 1 & 1 \\ 5 & -5 \\ 1 & -15 \end{matrix} \quad -340 \quad -5100$$

$D_C = -5100 - (-340) = -4760$

$A = \frac{-2720}{-136} = 20 \quad B = \frac{-1768}{-136} = 13 \quad C = \frac{-4760}{-136} = 35$

$AL = R\$20,00 \quad Bia = R\$13,00 \quad Caco = R\$35,00$

-15

R: (A)

⑤

$$A = \begin{bmatrix} 0 & 3 & 4 \\ 1 & 0 & 5 \\ 2 & 1 & 0 \end{bmatrix} \quad X = \begin{bmatrix} x \\ y \\ z \end{bmatrix}$$

$A = 134,00$
$B = 115,00$
$C = 48,00$

$$\begin{cases} 3y + 4z = 134 \\ x + 5z = 115 \\ 2x + y = 48 \end{cases}$$

$$D = \begin{vmatrix} 0 & 3 & 4 \\ 1 & 0 & 5 \\ 2 & 1 & 0 \end{vmatrix} \quad \begin{matrix} 0 & 3 \\ 1 & 0 \\ 2 & 1 \end{matrix} \quad D = 34$$

$30 + 4 = 34$

$$D_A = \begin{vmatrix} 134 & 3 & 4 \\ 115 & 0 & 5 \\ 48 & 1 & 0 \end{vmatrix} \quad \begin{matrix} 134 & 3 \\ 115 & 0 \\ 48 & 1 \end{matrix} \quad 670$$

$D_A = 1180 - 670 = 510$

$920 \quad 720 + 460 = 1180$

$$D_B = \begin{vmatrix} 0 & 134 & 4 \\ 1 & 115 & 5 \\ 2 & 48 & 0 \end{vmatrix} \quad \begin{matrix} 0 & 134 \\ 1 & 115 \\ 2 & 48 \end{matrix}$$

$D_B = 1532 - 920 = 612$

$1340 + 192 = 1532$

144

D_c =	0	3	134	0	3
	1	0	115	1	0
	2	1	98	2	1

690 + 134 = 824

$D_c = 824 - 144 = 680$

$A = \frac{510}{34} = 15$ $\quad B = \frac{612}{34} = 18$ $\quad C = \frac{680}{34} = 20$

A + B + C

15 + 18 + 20

R$ 53,00

R: (A)