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DOM SEG TER QUA QUI SEX SÁB
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5. $A = \begin{vmatrix} 0 & 3 & 4 \\ 1 & 0 & 5 \\ 2 & 1 & 0 \end{vmatrix}$ $x = \begin{vmatrix} x \\ y \\ z \end{vmatrix}$ $A_x = \begin{vmatrix} 134 \\ 115 \\ 48 \end{vmatrix}$

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

$$\left(\begin{array}{ccc|c} 0 & 3 & 4 & 134 \\ 1 & 0 & 5 & 115 \\ 2 & 1 & 0 & 48 \end{array}\right) \xrightarrow{-2} \sim \left(\begin{array}{ccc|c} 1 & 0 & 5 & 115 \\ 0 & 1 & -10 & -182 \end{array}\right) \xrightarrow{-\frac{1}{3}} \sim \left(\begin{array}{ccc|c} & & & 134 \\ & & & 115 \\ 0 & 0 & \frac{-34}{3} & \frac{-680}{3} \end{array}\right)$$

$$\left(\frac{-34}{3}\right) z = \left(\frac{-680}{3}\right) \rightarrow z = \left(\frac{-680}{3}\right)\left(\frac{-3}{34}\right) \rightarrow z = \frac{680}{34}$$

$z = 20$

$y = 10.20 = 182$

$y = (-182) + 200$

$y = 18$

$x + 5.20 = 115$ $20 + 18 + 5 = 58$ Resp: A

$x = 115 - 100$

$x = 15$

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Tarefa básica II

1. $\begin{cases} 2x - y - 3z = -5 \\ x + 3y - z = 11 \\ x - 5z = 3 \end{cases}$ $S = \begin{cases} x - 5z = 3 \\ x + 3y - z = 11 \\ 2x - y - 3z = -5 \end{cases}$

$$\begin{matrix} -2 \\ -1 \\ \end{matrix}\left(\begin{array}{ccc|c} 1 & 0 & -5 & 3 \\ 1 & 3 & -1 & 11 \\ 2 & -1 & -3 & 5 \end{array}\right) \sim \left(\begin{array}{ccc|c} & & & \\ 0 & 3 & 4 & 8 \\ 0 & -1 & 7 & -11 \end{array}\right) \sim \left(\begin{array}{ccc|c} & & & \\ & & & \\ 0 & 0 & 25 & -25 \end{array}\right)$$

$\frac{1}{3}$ L2

$x - 5z = 3$
$x - 5(-1) = 3$
$x = 3 - 5$
$x = -2$

$3y + 4z = 8$
$3y + 4(-1) = 8$
$3y = 8 + 4$
$y = \frac{12}{3}$
$y = 4$

$25z = -25$
$z = \frac{-25}{25}$
$z = -1$

$V = \{(-2, 4, -1)\}$ //

2. $\begin{cases} x = 2y \\ 2y = 3z \\ x + y + z = 11 \end{cases}$ $x = 2y$ $y = ?$
$z = \frac{2y}{3}$

$x + y + z = 11$
$2y + y + \frac{2y}{3} = 11$

$\frac{6y}{3} + \frac{3y}{3} + \frac{2y}{3} = \frac{33}{3}$

$11y = 33$
$y = \frac{33}{11} = 3$

$x = 2y$ $y = 3$
$x = 2.3$
$x = 6$

$z = \frac{2y}{3}$
$z = \frac{2.3}{3}$

$z = \frac{6}{6}$
$z = 2$

$x + 2y + 3z$
$6 + 2.3 + 3.2$
$6 + 6 + 6 = 18$ //

Resposta: D

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5. $\begin{cases} 2x+y=5 \\ 2y+z=3 \\ 3x+2y+z=7 \end{cases}$

$D = \begin{vmatrix} 2 & 1 & 0 \\ 0 & 2 & 1 \\ 3 & 2 & 1 \end{vmatrix} \begin{matrix} 2 & 1 \\ 0 & 2 \\ 3 & 2 \end{matrix}$ → 7-4=3

0+4+0=4 4+5+0=7

$D_x = \begin{vmatrix} 5 & 1 & 0 \\ 3 & 2 & 1 \\ 7 & 2 & 1 \end{vmatrix} \begin{matrix} 5 & 1 \\ 3 & 2 \\ 7 & 2 \end{matrix}$ → 17-13=4

0+10+3=13 10+7+0=17

$D_y = \begin{vmatrix} 2 & 5 & 0 \\ 0 & 3 & 1 \\ 3 & 7 & 1 \end{vmatrix} \begin{matrix} 2 & 5 \\ 0 & 3 \\ 3 & 7 \end{matrix}$ → 21-14=7

0+14+0=14 6+15+0=21

$D_z = \begin{vmatrix} 2 & 1 & 5 \\ 0 & 2 & 3 \\ 3 & 2 & 7 \end{vmatrix} \begin{matrix} 2 & 1 \\ 0 & 2 \\ 3 & 2 \end{matrix}$ → 37-42=-5

30+12+0=42 25+9+0=37

$x = \frac{4}{3}, y = \frac{7}{3}, z = \frac{-5}{3}$

Resposta: D

6. $\begin{bmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ -1 & 2 & 2 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 3 \\ 7 \\ -1 \end{bmatrix}$ → $\begin{cases} x=3 \\ 2x+y=7 \\ -x+2y+2z=-1 \end{cases}$

$D = \begin{bmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ 1 & 2 & 2 \end{bmatrix} \begin{matrix} 1 & 0 \\ 2 & 1 \\ -1 & 2 \end{matrix}$ → 2-0=2

0+0+0=0 2+0+0=2

$D_z = \begin{vmatrix} 1 & 0 & 3 \\ 2 & 1 & 7 \\ -1 & 2 & -1 \end{vmatrix} \begin{matrix} 1 & 0 \\ 2 & 1 \\ -1 & 2 \end{matrix}$ → 11-11=0

-3+14+0=11 -1+0+12=11

$D_y = \begin{vmatrix} 1 & 3 & 0 \\ 2 & 7 & 0 \\ -1 & -1 & 2 \end{vmatrix} \begin{matrix} 1 & 3 \\ 2 & 7 \\ -1 & -1 \end{matrix}$ → 14-12=2

0+0+12=12 14+0+0=14

$x = \frac{3}{2}, y = \frac{2}{2} = 1, z = \frac{0}{2} = 0$

Resposta: E

SÃO DON

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

$D = \begin{vmatrix} 1 & 2 & -3 \\ 1 & 3 & 2 \\ 1 & -1 & -2 \end{vmatrix} \begin{matrix} 1 & 2 \\ 1 & 3 \\ 1 & -1 \end{matrix}$ → $-4 - (-15) = 16$

$D_x = \begin{vmatrix} 29 & 2 & -3 \\ 4 & 3 & 2 \\ 8 & -1 & -2 \end{vmatrix} \begin{matrix} 29 & 2 \\ 4 & 3 \\ 8 & 1 \end{matrix}$ → $-130 - (-146) = 16$

$-72 - 58 - 16 = -146$ $\quad -174 + 32 + 12 = -130$

$D_y = \begin{vmatrix} 1 & 29 & -3 \\ 1 & 4 & 2 \\ 1 & 8 & -2 \end{vmatrix} \begin{matrix} 1 & 29 \\ 1 & 4 \\ 1 & 8 \end{matrix}$ → $26 - (-54) = 80$

$-12 + 16 - 58 = -54$ $\quad -8 + 58 - 24 = 26$

$D_z = \begin{vmatrix} 1 & 2 & 29 \\ 1 & 3 & 4 \\ 1 & -1 & 8 \end{vmatrix} \begin{matrix} 1 & 2 \\ 1 & 3 \\ 1 & -1 \end{matrix}$ → $3 - 99 = -96$

$87 - 4 + 16 = 99$ $\quad 24 + 8 - 29 = 3$

$x = \frac{16}{16} = 1$ $\quad y = \frac{80}{16} = 5$ $\quad z = \frac{-96}{16} = -6$ $\quad x + y + z$

$1 + 5 - 6 = 0$

Resposta: A

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

$D = \begin{vmatrix} 3 & 4 & -1 \\ 4 & 5 & 2 \\ 1 & 2 & 3 \end{vmatrix}$ | 3 4 | 4 5 | $+61-31=30$

$-5-12+48=31$ $45+8+8=61$

$D_y = \begin{vmatrix} 3 & 1 & -1 \\ 4 & 12 & 2 \\ 1 & 8 & 3 \end{vmatrix}$ | 3 1 | 4 12 | $-8-78-48=30$

$-12+48+12=48$ $64+2-32=78$

$y = \frac{D_y}{D}$

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

Resposta: A

3. $\begin{cases} x+2y+z=1 \\ 3x+y-11z=-2 \\ 2x+3y-z=1 \end{cases}$

$D = \begin{vmatrix} 1 & 2 & 1 \\ 3 & 1 & -11 \\ 2 & 3 & -1 \end{vmatrix}$ | 1 2 | 3 1 | $-3-36-(-37)=1$

$2-33-6=-37$ $-1-44+9=-36$

$D_x = \begin{vmatrix} 1 & 2 & 1 \\ -2 & 1 & -11 \\ 1 & 3 & -1 \end{vmatrix}$ | 1 2 | -2 1 | $+29-(-28)=-1$

$1-33+4=28$ $-1-22-6=-29$

$D_y = \begin{vmatrix} 1 & 1 & 1 \\ 3 & 2 & -11 \\ 2 & 1 & -1 \end{vmatrix}$ | 1 1 | 3 2 | $-2-11-3=-18$ $2+22+3=-17$

$-11-(-18)=1$

$D_z = \begin{vmatrix} 1 & 2 & 1 \\ 3 & 1 & -2 \\ 2 & 3 & 1 \end{vmatrix}$ | 1 2 | 3 1 | $2-2=0$

$2-6+6=2$ $1-8+9=2$

$x = \frac{-1}{1} = -1$ $y = \frac{1}{1} = 1$ $z = \frac{0}{1} = 0$

$V = \{(-1, 1, 0)\}$ $a+b+c$

$-1+1+0=0$

Resposta: C

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1.a $\begin{cases} 2x - y = 2 \\ -x + 3y = -3 \end{cases}$

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

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

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

$x = \frac{D_x}{D} = \frac{3}{5}$ $y = \frac{D_y}{D} = \frac{4}{5}$

Resposta: $V = \{(\frac{3}{5}; \frac{4}{5})\}$

b. $\begin{cases} 3x - y + z = 1 \\ 2x + 3z = -1 \\ 4x + y - 2z = 7 \end{cases}$

$D = \begin{vmatrix} 3 & -1 & 1 & 3 & -1 \\ 2 & 0 & 3 & 2 & 0 \\ 4 & 1 & -2 & 4 & 1 \end{vmatrix}$ $0 + 9 + 4 = 13$ $0 - 12 + 2 = -10$ $3 + 10 - 13 = -23$

$D_x = \begin{vmatrix} 1 & -1 & 1 & 1 & -1 \\ -1 & 0 & 3 & -1 & 0 \\ 7 & 1 & -2 & 7 & 1 \end{vmatrix}$ $0 + 3 - 2 = 1$ $0 - 21 - 1 = -22$ $-22 - 1 = -23$

$D_z = \begin{vmatrix} 3 & -1 & 1 & 3 & -1 \\ 2 & 0 & -1 & 2 & 0 \\ 4 & 1 & 7 & 4 & 1 \end{vmatrix}$ $0 - 3 - 14 = -17$ $0 + 4 + 2 = 6$ $6 - (-17) = 23$

$D_z = \begin{vmatrix} 3 & 1 & 1 & 3 & 1 \\ 2 & -1 & 3 & 2 & -1 \\ 4 & 7 & 2 & 4 & 7 \end{vmatrix}$ $-4 + 63 - 4 = 55$ $6 + 12 + 14 = 32$ $32 - 55 = -23$

$x = \frac{D_x}{D} = \frac{-23}{-23} = 1$ $y = \frac{D_y}{D} = \frac{-23}{-23} = 1$

$z = \frac{D_z}{D} = \frac{23}{-23} = -1$

Resposta: $V = \{(1, 1, -1)\}$

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