d 2

Tarefa Básica

Escalonamento (Gauss)

1-

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

$$\begin{pmatrix} 2 & -1 & -3 & \vdots & -5 \\ 1 & 3 & -1 & \vdots & 11 \\ 1 & 0 & -5 & \vdots & 3 \end{pmatrix} \sim_{-7} \begin{pmatrix} 7 & 0 & -10 & \vdots & -4 \\ 1 & 0 & -5 & \vdots & 3 \end{pmatrix} \sim \begin{pmatrix} & & & & \\ 0 & 0 & 25 & \vdots & -25 \end{pmatrix}$$

$25z = -25$

$z = -1$

$1.x + 3y - 1z = 11$

$-2 + 3y + 1 = 11$

$3y = 12$

$y = 4$

$7x - 10z = -4$

$7x - 10.(-1) = -4$

$7x + 10 = -4$

$7x = -14$

$x = -2$

$V = \{(-2, 4, -11\}$ $V = \{(-2, 4, -1)\}$

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

$x = 2y \longrightarrow x = 2y$

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

$x = 2.y$

$x = 2.3$

$x = 6$

$x + y + z = 11$

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

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

$6y + 3y + 2y = 33$

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

$z = 2$

$11y = 33$

$y = 3$

$x + 2y + 3z =$

$6 + 2.3 + 3.2 = \underline{18}$

(B)

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

$$\xrightarrow{-2} \begin{pmatrix} 1 & 1 & 1 & : & 0 \\ 2 & -1 & -2 & : & 1 \\ 0 & 6 & 3 & : & -12 \end{pmatrix} \underset{1.}{\sim} \begin{pmatrix} 0 & -3 & -4 & : & 1 \\ 0 & 6 & 3 & : & -12 \end{pmatrix} \sim \begin{pmatrix} & & & & \\ 0 & 0 & -5 & : & -10 \end{pmatrix}$$

$-5z = -10$

$z = \underline{2}$

(D)

4

$A = AL_1$ $\quad A+B+C=68$

$B = BIA$

$C = CACO$

$B + \frac{20}{100} \cdot C = A \rightarrow B + 0,2C = A$

$C + \frac{20}{100} \cdot A = 3B \rightarrow C + 0,2A = 3B$

$A+B+C=68$ I

$B+0,2C=A$ II

$C+0,2A=3B$ III

$(B+0,2C)+B+C=68$

$2B+1,2C=68$

$B=\frac{68-1,2C}{2}$

$B=34-0,6C$

↙

III

$C+0,2A=3.(34-0,6C)$

$C+0,2A=102-1,8C$

$2,8C+0,2A=102$

$2,8C+0,2.(B+0,2C)=102$

$2,8C+0,2B+0,4C=102$

$2,84C+0,2B=102$

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$0,2(34-0,6C)+2,84C=102$
$6,8-0,12C+2,84C=102$
$2,72C+6,8=102$
$2,72C=95,2$
$C=35$

$B=34-0,6C$
$B=34-0,6.35$
$B=34-21$
$B=13$

$A+B+C=68$
$A+13+35=68$
$A=68-48$
$A=20$

ALI = R$ 20,00
BIA = R$ 13,00
CACO = R$ 35,00

C - A
↓ ↓
35 - 20 = 15

ALI tem R$ 15,00 a menos que CACO. (A)

5.

Alfeu = 134 = x
Bento = 115 = y
Cintia = 48 = z

$A=\begin{vmatrix} 0 & 3 & 4 \\ 1 & 0 & 5 \\ 2 & 1 & 0 \end{vmatrix}$ $x=\begin{vmatrix} x & -134 \\ y & -115 \\ z & -48 \end{vmatrix}$

$$\begin{cases} 3y+4z=134 \\ x+5z=115 \\ 2x+y=48 \end{cases} \quad - \left(\begin{array}{ccc:c} 0 & 3 & 4 & 134 \\ 1 & 0 & 5 & 115 \\ 2 & 1 & 0 & 48 \end{array}\right)$$

$$N_1 \left(\begin{array}{ccc:c} 0 & 3 & 4 & 134 \\ & & & \\ 0 & 1 & 10 & 182 \end{array}\right) \sim \left(\begin{array}{ccc:c} & & & \\ & & & \\ 0 & 0 & 34 & 680 \end{array}\right)$$

$34z=680$
$z=20$

$x+5z=115$
$x+5.20=115$
$x=15$

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$3y + 4z = 134$

$3y + 4.20 = 134$

$3y + 80 = 134$

$3y = 54$

$y = 18$

$X + Y + Z =$

$15 + 18 + 20 = \underline{\underline{53}}$

(A)

R$ 53,00