

Escalonamento

$$\begin{aligned} x + 2y + z &= 2 \\ 3x + 8y + z &= 12 \\ 4y + z &= 2 \end{aligned}$$

$$\left(\begin{array}{ccc|c} 1 & 2 & 1 & 2 \\ 3 & 8 & 1 & 12 \\ 0 & 4 & 1 & 2 \end{array} \right)$$

$$\begin{array}{cccc} 1 & 2 & 1 & 2 \\ 0 & \times & \times & \times \\ 0 & \times & \times & \times \end{array}$$

$$\begin{array}{ccc|ccc|c} 1 & 0 & 0 & 1 & 2 & 1 & 2 \\ -3 & 1 & 0 & 3 & 8 & 1 & 12 \\ 0 & 0 & 1 & 0 & 4 & 1 & 2 \end{array} \rightarrow \begin{array}{ccc|ccc|c} 1 & 2 & 1 & 1 & 2 & 1 & 2 \\ 0 & 2 & -2 & 0 & 2 & -2 & 6 \\ 0 & 4 & 1 & 0 & 4 & 1 & 2 \end{array}$$

$$\begin{array}{ccc|ccc|c} 1 & 0 & 1 & 1 & 2 & 1 & 2 \\ 0 & 1 & 0 & 0 & 2 & -2 & 6 \\ 0 & -2 & 1 & 0 & 4 & 1 & 2 \end{array} \rightarrow \begin{array}{ccc|ccc|c} 1 & 2 & 1 & 1 & 2 & 1 & 2 \\ 0 & 2 & -2 & 0 & 2 & -2 & 6 \\ 0 & 0 & 5 & 0 & 0 & 5 & -10 \end{array}$$

$$\begin{aligned} x + 2y + z &= 2 \\ 2y - 2z &= 6 \\ 5z &= -10 \end{aligned}$$

$$\begin{aligned} x + 2 - 2 &= 2 \rightarrow x = 2 \\ y = 1 \\ z = -2 \end{aligned}$$

(2, 1, 2)

Interpretação geométrica

π_1
 $\pi_2 \rightarrow \pi_{12}$

$\pi_{12} \& \pi_3$
 $\pi_{12} \not\sim \pi_3$

SOL: PONTO

MUDAMOS AGORA O NOSSO SISTEMA

$$\begin{array}{ccc|ccc|c} 1 & 2 & 1 & 1 & 2 & 1 & 2 \\ 3 & 8 & 1 & 3 & 8 & 1 & 12 \\ 0 & 4 & -4 & 0 & 4 & -4 & 2 \end{array}$$

PRIMEIRO PASSO ok!

SEGUNDO MUDA

$$\begin{array}{ccc|ccc|c} 1 & 0 & 0 & 1 & 2 & 1 & 2 \\ 0 & 1 & 0 & 0 & 2 & -2 & 6 \\ 0 & -2 & 1 & 0 & 4 & -4 & 2 \end{array} \rightarrow \begin{array}{ccc|ccc|c} 1 & 2 & 1 & 1 & 2 & 1 & 2 \\ 0 & 2 & -2 & 0 & 2 & -2 & 6 \\ 0 & 0 & 0 & 0 & 0 & 0 & -10 \end{array}$$

$$x + 2y + z = 2 \rightarrow x = 2 - 2y - z$$

$$2y - 2z = 6 \rightarrow y = 3 + z$$

$$(x, y, z) = (-4, 3, 0) + z(-3, 1, 1)$$

$$\pi_3: 4y - 4z = 2$$

$$\pi_{12} // \pi_3$$

MAS $\pi_{12} \not\sim \pi_3$

$$(-4, 3, 0) \notin \pi_3$$

SEM SOLUÇÃO

$0 = -10 !!!$

SE $(-4, 3, 0) \in \pi_3$ TEREMOS ∞ SOLUÇÕES
"RETA"

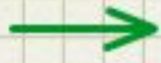
$$\begin{array}{ccc|c} 1 & 2 & 1 & 2 \\ 3 & 8 & 1 & 12 \\ 0 & 4 & -4 & 12 \end{array}$$

1º PASSO

$$\begin{array}{ccc|c} 1 & 2 & 1 & 2 \\ 0 & 2 & -2 & 6 \\ 0 & 4 & -4 & 12 \end{array}$$

2º PASSO

$$\begin{array}{ccc|c} 1 & 2 & 1 & 2 \\ 0 & 2 & -2 & 6 \\ \hline 0 & 0 & 0 & 0 \end{array}$$



infinitas soluções