

1º Lista de Sistemas Lineares

Resolva os sistemas

$$\textcircled{1} \begin{cases} 5x - 2y = 1 & X=1 \\ 4x + 2y = 11 & Y=2 \end{cases}$$

$$\textcircled{2} \begin{cases} x - y = -3 & X=3 \\ x + 2y = 3 & Y=0 \end{cases}$$

$$\textcircled{3} \begin{cases} 4x + y = 3 & X=1 \\ 2x - 2y = -1 & Y=1 \end{cases}$$

$$\textcircled{4} \begin{cases} \frac{1}{x} + \frac{1}{y} = 1 & X=1 \\ \frac{1}{2} - \frac{2}{y} = -1 & Y=1 \end{cases}$$

$$\textcircled{5} \begin{cases} x + 2y - 3z = 10 & 2, 3, 5, -1 \\ 2x + y + z = 3 \\ -3x + 2y + z = -6 \end{cases}$$

$$\textcircled{6} \begin{cases} x + y + z = 7 \\ 2x + y - z = 9 & -13 + 25 \quad 10 \\ x - 2y + 2z = 2 & +13 \quad -13 \end{cases}$$

Resoluções e Respostas

$\textcircled{1} \begin{cases} 5x - 2y = 1 \\ 4x + 2y = 11 \end{cases}$ $\begin{array}{r} 5x - 2y = 1 \\ 4x + 2y = 11 \\ \hline 12x + 0y = 12 \\ 12x = 12 \\ x = 12/12 = 1 \end{array}$	$\begin{cases} 5 \cdot 1 - 2y = 1 \\ 5 - 2y = 1 \\ 2y = 5 - 1 \\ 2y = 4 \\ y = 4/2 \\ y = 2 \end{cases}$	$\begin{cases} 1 \cdot 1 + 2y = 11 \\ 1 + 2y = 11 \\ 2y = 11 - 1 \\ 2y = 10 \\ y = 10/2 \\ y = 5 \end{cases}$
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$$\textcircled{2} \text{ (1) } \begin{aligned} x - y &= 3 \\ x + 2y &= 3 \end{aligned}$$

$$\begin{aligned} x - 0 &= 3 \\ x &= 3 - 0 \\ \underline{x} &= 3 \end{aligned}$$

$$\begin{aligned} x + 2 \cdot 0 &= 3 \\ x + 0 &= 3 \\ \underline{x} &= 3 - 0 \end{aligned}$$

$$-x + y = -3$$

$$x + 2y = 3$$

$$0x + 3y = 0$$

$$3y = 0$$

$$y = 0/3$$

$$\underline{y = 0}$$

$$\textcircled{3} \text{ (2) } \begin{aligned} 4x - y &= 3 \\ 2x - 2y &= -1 \end{aligned}$$

$$2x - 2y = -1$$

$$4x - y = 3$$

$$2x - 2y = -1$$

$$8x - 2y = 6$$

$$2x - 2y = -1$$

$$10x - 0y = 5$$

$$10x = 5$$

$$x = 1/2$$

$$\underline{x = 1/2}$$

$$4x - y = 3$$

$$-4x + 4y = 2$$

$$0x + 5y = 5$$

$$5y = 5$$

$$y = 5/5 = 1$$

$$\underline{y = 1}$$

$$4x - y = 3$$

$$8 - y = 3$$

$$y = 3 - 8$$

$$y = -5$$

$$4x - 1 = 3$$

$$4x = 3 + 1 = 4$$

$$x = 4/4$$

$$x = 1$$

$$\underline{x = 1}$$

$$2x - 2y = -1$$

$$4 - 2y = -1$$

$$-2y = -1 - 4$$

$$2y = -5$$

$$2x - 2 \cdot 1 = -1$$

$$2x - 2 = -1$$

$$2x = -1 + 2$$

$$2x = 1$$

$$x = 1/2$$

$$\underline{x = 1/2}$$

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$$\textcircled{4} \left\{ \begin{array}{l} \frac{1}{x} + \frac{1}{y} = 1 \\ \frac{1}{2} - \frac{2}{y} = -1 \end{array} \right.$$

$$\left\{ \begin{array}{l} \frac{1}{x} + \frac{1}{y} = 1 \\ \frac{1}{2} - \frac{2}{y} = -1 \end{array} \right.$$

$$\frac{1}{2} - \frac{2}{y} = -1$$

$$\frac{1}{2} - \frac{2}{y} = -1$$

$$\frac{2}{x} + \frac{2}{y} = 2$$

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

$$\frac{1}{2} - \frac{2}{y} = -1$$

$$\frac{1}{2} - \frac{2}{y} = -1$$

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

$$\frac{2+0}{2x \quad 0y} = 1$$

$$\frac{0.5-2}{y} = -1$$

$$\frac{2+0}{2 \quad 0}$$

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

$$\frac{1+0}{1} = 1$$

$$x \cdot 1 = 1$$

$$\frac{1}{x} + \frac{1}{y}$$

$$\frac{1}{x} + \frac{1}{1} = \frac{1x}{1}$$

$$\frac{1}{2} - \frac{2}{y}$$

$$\frac{1}{2} - \frac{2}{1} = \frac{4}{2}$$

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$$\begin{aligned} \textcircled{1} \quad & X + 2Y - 3Z = 10 \\ & 2X + Y + Z = 3 \\ & -3X + 2Y + Z = -6 \end{aligned}$$

$$\begin{aligned} D \left\{ \begin{array}{ccc|ccc} 1 & 2 & -3 & 1 & 2 & \\ 2 & 1 & 1 & 2 & 1 & \\ -3 & 2 & 1 & -3 & 2 & \end{array} \right\} \\ -9 & -2 & -4 & 1 & -6 & -12 \\ -15 & +1 & -18 & & & \\ -14 & -18 & & & & \\ \hline & -32 & & & & \end{aligned}$$

$$\begin{aligned} DX \left\{ \begin{array}{ccc|ccc} 10 & 2 & -3 & 10 & 2 & \\ 3 & 1 & 1 & 3 & 1 & \\ -6 & 2 & 1 & -6 & 2 & \end{array} \right\} \\ -18 & -20 & -6 & 10 & -12 & -18 \\ -44 & +10 & -30 & & & \\ -34 & -30 & & & & \\ \hline & -64 & & & & \end{aligned}$$

$$\begin{aligned} DY \left\{ \begin{array}{ccc|ccc} 1 & 10 & -3 & 1 & 10 & \\ 2 & 3 & 1 & 2 & 3 & \\ -3 & -6 & 1 & -3 & -6 & \end{array} \right\} \\ +27 & +6 & -20 & 3 & -30 & +36 \\ -21 & -20 & +3 & -30 & +36 \\ -41 & +3 & -30 & +36 \\ -38 & -39 & -36 \\ -68 & -36 \\ -104 \end{aligned}$$

$$\begin{aligned} & 104 \\ & 3 \overline{) 104} \\ & 33 \overline{) 104} \\ & 31 \overline{) 104} \\ & 32 \overline{) 104} \end{aligned}$$

$$\begin{aligned} DZ \left\{ \begin{array}{ccc|ccc} 1 & 2 & 10 & 1 & 2 & \\ 2 & 1 & 3 & 2 & 1 & \\ 3 & 2 & -6 & 3 & 2 & \end{array} \right\} \\ 30 & -6 & +24 & -6 & -18 & +40 \\ 24 & +24 & -6 & -18 & +40 \\ 48 & -6 & -18 & +40 \\ 42 & -18 & +40 \\ 24 & +40 \\ \hline & 64 \end{aligned}$$

$$\frac{DX}{D} = \frac{-64}{-32} = 2$$

$$\frac{DY}{D} = \frac{-104}{-32} = 3.25$$

$$\frac{DZ}{D} = \frac{64}{-32} = -2$$

B. 06/12

$$\begin{aligned} \textcircled{c} \quad & x + y + z = 7 \\ & 2x + y - z = 9 \\ & 4x - 3y + 2z = 2 \end{aligned}$$

$$Ox = \begin{pmatrix} 1 & 1 & 1 & 1 & 1 \\ 2 & 1 & 1 & 2 & 1 \\ 4 & -3 & 2 & 1 & -2 \end{pmatrix}$$

$$Ox = \begin{pmatrix} 1 & 1 & 1 & 1 & 1 \\ 2 & 1 & 1 & 2 & 1 \\ 4 & -3 & 2 & 1 & -2 \end{pmatrix}$$

$$\begin{aligned} -7 + 18 - 4 + 2 + 9 - 28 \\ 11 - 4 + 2 + 9 - 28 \\ 4 + 2 + 9 - 28 \end{aligned}$$

$$\begin{aligned} -1 - 4 - 4 + 2 - 2 - 4 \\ -9 + 2 - 6 \\ -7 - 6 \\ \boxed{-13} \end{aligned}$$

$$18 - 28 \\ Ox = -10$$

$$Ox = 0 - \boxed{13}$$

$$Ox = \begin{pmatrix} 4 & 1 & 1 & 7 & 1 \\ 9 & 1 & -2 & 9 & 1 \\ 2 & 2 & 2 & 2 & -2 \end{pmatrix}$$

$$Ox = -25 \boxed{+25}$$

$$\begin{aligned} -2 + 28 - 18 + 4 - 18 \\ + 26 - 18 + 19 - 4 + 18 \end{aligned}$$

$$Ox = \frac{10}{-13} = \boxed{10}$$

$$8 + 19 - 4 - 19$$

$$22 - 22$$

$$0$$

$$\begin{pmatrix} 1 & 1 & 1 & 1 & 1 \\ 2 & 3 & -2 & 2 & 3 \\ 1 & 2 & 2 & 1 & 2 \end{pmatrix}$$

$$2510$$

$$1311$$

$$170$$

$$-3 + 4 - 28 + 18 - 19 + 4$$

$$-5 - 18 + 18 - 19 + 4$$

$$-37 + 18 - 19 + 4$$

$$-15 - 19 + 4$$

$$-29 + 4$$

$$\boxed{-25}$$

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