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E c u a c i o n e s

s i m u l t a n e a s

Por metodo de reducción
resuelva la siguiente
ecuación de 3×3

$$x + y + z = 2$$

$$2x + 3y + 5z = 11$$

$$x - 5y + 6z = 29$$

$$x + y + z = 2$$

$$2x + 3y + 5z = 11$$

$$-2x - 2y - 2z = -2$$

$$\underline{2x + 3y + 5z = 10}$$

$$/ \quad 5y + 3z$$

$$\begin{array}{l} \nearrow (2) \\ \searrow (1) \end{array}$$

$$2x + 3y + 5z = 11$$

$$\underline{x - 5y + 6z = 29}$$

$$-2x + 3y + 5z$$

$$\underline{2x - 10y + 12z}$$

$$/ \quad 7y + 17z$$

$$\begin{array}{l} \nearrow (-1) \\ \searrow (2) \end{array}$$

Wolfram Alpha / Tamarin, Copier

$$\begin{cases} x-1 = y+1 & (-3) \\ x-5 = 3y-7 & (1) \end{cases}$$

Metodo de reduccion

$$-3x+3 = 3y+3$$

$$\underline{x-5 = 3y-7}$$

$$-4x / = 6y-10 = 4$$

$$x = \frac{4}{-4}$$

$$\underline{x = -1}$$

$$x = -1$$

$$x-1 = y$$

$$(-1) - y = y$$

$$1 - y = 1$$

$$y = 1-1$$

$$\underline{y = 0}$$

Metodo de igualacion

$$x-1 = y+1 \quad (3)$$

$$\underline{x-5 = 3y-7} \quad (4)$$

$$\begin{array}{l|l} x-1 = 2y & x-5 = 4y \\ x = 2y-1 & x = 4y+5 \end{array}$$

$$\underline{x = 4y+5}$$

Reemplazo $y=1$

$$x-1 = 4$$

$$x+1(1) = 4$$

$$x+1 = 4$$

$$x = 4-1$$

$$\underline{x = 3}$$

$$2y-1 = 4y+5$$

$$2y-1 = 4y+5$$

$$2y-4y = 1+5$$

$$2y = 2$$

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

$$y = 1$$

Por el método de reducción e igualación resuelva los siguientes ejercicios deben realizarse los 3 ejercicios por los dos métodos

Resuelva los siguientes sistemas de ecuaciones

$$\begin{cases} 8x - 5 = 7y - 9 & (6) \\ 6x = 3y + 6 & (8) \end{cases}$$

Método de reducción

$$\begin{aligned} 8x - 5 &= 7y - 9 \\ x &= \frac{1}{2}y + 1 \\ 8\left(\frac{1}{2}y + 1\right) - 5 &= 7y - 9 \\ y &= 4 \end{aligned}$$

Método de igualación

$$\begin{array}{r} 8x - 5 = 7y - 9 \\ 6x = 3y + 6 \\ \hline 8x - 5 = 7y - 9 \quad | \quad 6x = 3y + 6 \\ x = \frac{7y + 5}{8} \quad | \quad x = \frac{3y + 6}{6} \end{array}$$

$$\begin{aligned} \frac{7y + 5}{8} &= \frac{3y - 6}{6} \\ 8(7y + 5) &= 6(3y - 6) \\ 56y + 40 &= 18y - 36 \\ 56y + 18y &= 40 - 36 \\ 74y &= 4 \\ y &= \frac{4}{74} \\ y &= \frac{2}{37} \end{aligned}$$

sustituyendo

$$\begin{aligned} 6x - 6 &= 3y \\ 6(4) - 6 &= 3y \\ 6 - 6 &= 3 \\ 0 &= 3 - 6 \\ 3 &= 3 \\ x &= 3/3 \\ x &= 1 \end{aligned}$$

$$\begin{aligned} 8x - 5 &= 7y - 9 \\ 8x - 5(6) &= 7y - 9 \\ 8x - 30 &= 7y - 9 \\ 8x &= 16 + 30 \\ 8x &= 46 \\ x &= \frac{46}{8} \\ x &= \frac{23}{4} \end{aligned}$$

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$$3 \begin{cases} 3(x+2) = 2y \\ 2(y+5) = 7x \end{cases}$$

Metodo de Reduccion

$$\textcircled{1} 3(x+2) = 2y$$

$$3x + 6 = 2y$$

$$3x = \frac{2y - 6}{3} = \frac{2y - 2}{3}$$

$$x = \frac{2}{3}y - 2$$

Sustituido

$$\textcircled{2} 2(y+5) = 7x$$

Metodo de Igualacion

$$2y + 10 = 7x$$

$$3(x+2) = 2y$$

$$2y + 10 = 7x$$

$$2(y+5) = 7x$$

$$3\left(\frac{2}{3}y - 2\right) + 10 = 7x$$

$$\textcircled{3} 3x + 6 = 2y$$

$$2y + 6 + 10 = 7x$$

$$3x = 2y - 6y$$

$$16 + 2y = 7x$$

$$\textcircled{4} 2y + 10 = 7x$$

$$2y = 7x + 16$$

$$2y = 7x + 10$$

$$y = \frac{23}{2}$$

$$y = \frac{7x + 10}{2}$$

$$y = 11.5 = \frac{23}{2}$$

$$2y - 6y = \frac{7x + 10}{2}$$

$$2 - 4y = 7x + 10$$

$$7x - 4y = 2 + 10$$

$$3x = 12$$

$$x = \frac{12}{3}$$

$$x = 4$$

Reemplaco $x = 4$ en $\textcircled{2}$

$$2y - 6x = 7x$$

$$y = 31$$

$$y - 6(4) = 7x$$

$$y - 24 = 7x$$

$$y = 7 + 24$$