Sistema de ecuaciones lineales 3x3

Bit Planet

Solución Método por suma y resta

$$\begin{cases} x+y+z=100 & \text{Ec. 1} \\ 5x+10y+20z=1350 & \text{Ec. 2} \\ x+y=z & \text{Ec. 3} \end{cases}$$

$$\begin{cases} x+y+z=100 & \text{Ec. 1} \\ 5x+10y+20z=1350 & \text{Ec. 2} \\ x+y-z=0 & \text{Ec. 3} \end{cases}$$

Ec. 1 y Ec. 3

$$x+y+z=100$$
$$x+y-z=0$$

$$-x-y-z=-100$$
$$+\quad x+y-z=0$$
$$-2z=-100$$

$$-1(x+y+z=100)$$
$$(x+y-z=0)$$

$$-2z=-100$$
$$z=\frac{-100}{-2}$$
$$z=50$$

Ec. 1 y Ec. 2

$$x+y+z=100$$
$$5x+10y+20z=1350$$

$$-5(x+y+z=100)$$
$$(5x+10y+20z=1350)$$

$$-5x-5y-5z=-500$$
$$+\quad 5x+10y+20z=1350$$
$$0+5y+15z=850$$

$$5y+15z=850 \quad \text{Ec. 4}$$

Sustituir valor de z en Ec. 4

$$5y+15z=850$$
$$5y+15(50)=850$$
$$5y+750=850$$

$$5y=850-750$$
$$5y=100$$
$$y=\frac{100}{5}$$
$$y=20$$

Sustituir valor de "z" y "y" en Ec. 3

$z = 50 \qquad y = 20$

$x + y - z = 0$

$x + 20 - 50 = 0$

$x = -20 + 50$

$x = 30$