

Metodo Cramer

$$x + y + z = 37$$

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

$$-x + y - z = -13$$

$$\begin{bmatrix} 1 & 1 & 1 & | & 37 \\ -1 & -1 & 3 & | & 3 \\ -1 & 1 & -1 & | & -13 \end{bmatrix}$$

Determinante del sistema

$$\Delta_3 = \begin{vmatrix} x & y & z \\ 1 & 1 & 1 \\ -1 & -1 & 3 \\ -1 & 1 & -1 \\ 1 & 1 & 1 \\ -1 & -1 & 3 \end{vmatrix}$$

← Regla Sarrus

- Principales

- Secundarias

$$= (1 - 1 - 3) - (1 + 3 + 1)$$

$$- 3 - 5$$

$$\Delta_3 = \boxed{-8}$$

$$\Delta_x = T.I \quad Y \quad Z$$

1 — 0 Terminos Independientes

$$T.I \quad Y \quad Z$$

$$\begin{vmatrix} 37 & 1 & 1 & 37 & 1 \\ 3 & -1 & 3 & 3 & -1 \\ -13 & 1 & -1 & -13 & 1 \end{vmatrix}$$

$$\Delta_x = (37 - 39 + 3) - (13 + 111 - 3)$$

$$1 - 121$$

$$\boxed{\Delta_x = -120}$$

$$\Delta y = \begin{vmatrix} X & T & I \end{vmatrix} Z$$

$$\begin{vmatrix} 1 & 37 & 1 & 1 & 37 \\ -1 & 3 & 3 & -1 & 3 \\ -1 & -13 & -1 & -1 & -13 \end{vmatrix}$$

$$\Delta y = (-3 - 111 + 13) - (-3 - 39 + 37)$$

$$(-101) - (-5)$$

$$\Delta y = -96$$

$$\Delta z = \begin{vmatrix} X & Y & T & I \end{vmatrix}$$

$$\begin{vmatrix} 1 & 1 & 37 & 1 & 1 \\ -1 & -1 & 3 & -1 & -1 \\ -1 & 1 & -13 & -1 & 1 \end{vmatrix}$$

$$\Delta z = (13 - 3 - 37) - (37 + 3 + 13)$$

$$(-27) - (53)$$

$$\boxed{-80}$$

$$\Delta s = -8 \quad \Delta x = -120 \quad \Delta y = -96 \quad \Delta z = -80$$

$$x = \frac{\Delta x \Delta s}{\Delta s \Delta s} = \frac{-120}{-8} = \frac{-60}{-4} = \frac{-20}{-2}$$

$$x = 10$$

$$y = \frac{\Delta y}{\Delta s} = \frac{-96}{-8} = \frac{-48}{-4} = \frac{-24}{-2}$$

$$y = 12$$

$$z = \frac{\Delta z}{\Delta s} = \frac{-80}{-8} = \frac{-40}{-4} = \frac{-20}{-2}$$

$$z = 10$$

$$R/. \quad x = 10$$

$$y = 12$$

$$z = 10$$

Simón Andrés Trillos Almanza

$$\begin{bmatrix} 1 & 1 & 1 & 37 \\ -1 & -1 & 3 & 3 \\ -1 & 1 & -1 & -13 \end{bmatrix} \quad \begin{array}{l} F_2 - (-1) \times F_1 \rightarrow F_2 \\ \boxed{-1 - (-1) \times 1} \quad \boxed{-1 - (-1) \times 1} \quad \boxed{3 - (-1) \times 1} \quad \boxed{3 - (-1) \times 37} \\ \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\ 0 \quad 0 \quad 4 \quad 40 \end{array}$$

$$\begin{array}{l} F_3 - (-1) \times F_1 \rightarrow F_3 \\ \boxed{-1 - (-1) \times 1} \quad \boxed{1 - (-1) \times 1} \quad \boxed{-1 - (-1) \times 1} \quad \boxed{-13 - (-1) \times 37} \\ \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\ 0 \quad 2 \quad 0 \quad 24 \end{array} \quad \begin{bmatrix} 1 & 1 & 1 & 37 \\ 0 & 0 & 4 & 40 \\ -1 & 1 & -1 & -13 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 1 & 1 & 37 \\ 0 & 0 & 4 & 40 \\ 0 & 2 & 0 & 24 \end{bmatrix} \quad F_3 \leftrightarrow F_2 \quad \begin{bmatrix} 1 & 1 & 1 & 37 \\ 0 & 2 & 0 & 24 \\ 0 & 0 & 4 & 40 \end{bmatrix} \quad \times \left(\frac{1}{2}\right)$$

$$F_2 / (2) \rightarrow F_2 \quad \boxed{0/2} \quad \boxed{2/2} \quad \boxed{0/2} \quad \boxed{24/2} \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \begin{bmatrix} 1 & 1 & 1 & 37 \\ 0 & 1 & 0 & 12 \\ 0 & 0 & 4 & 40 \end{bmatrix}$$

$$F_3 / (4) \rightarrow F_3 \quad \boxed{0/4} \quad \boxed{0/4} \quad \boxed{4/4} \quad \boxed{40/4} \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \begin{bmatrix} 1 & 1 & 1 & 37 \\ 0 & 1 & 0 & 12 \\ 0 & 0 & 1 & 10 \end{bmatrix}$$

$$F_1 - 1 \times F_3 \rightarrow F_1 \quad \boxed{1 - 1 \times 0} \quad \boxed{1 - 1 \times 0} \quad \boxed{1 - 1 \times 1} \quad \boxed{37 - 1 \times 10} \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \begin{bmatrix} 1 & 1 & 0 & 27 \\ 0 & 1 & 0 & 12 \\ 0 & 0 & 1 & 10 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 & 0 & 15 \\ 0 & 1 & 0 & 12 \\ 0 & 0 & 1 & 10 \end{bmatrix} \quad F_1 - 1 \times F_2 \rightarrow F_1 \quad \boxed{1 - 1 \times 0} \quad \boxed{1 - 1 \times 1} \quad \boxed{0 - 1 \times 0} \quad \boxed{27 - 1 \times 12} \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \begin{bmatrix} 1 & 0 & 0 & 15 \\ 0 & 1 & 0 & 12 \\ 0 & 0 & 1 & 10 \end{bmatrix}$$