

Boletín Sist. Ecuac. IV – 3 Incógnitas – Matemáticas 3º E.S.O.

Ejemplo 1

$$\left. \begin{array}{l} 2x + y - z = 6 \\ x - y + 2z = -1 \\ -x + 3y = 1^* \end{array} \right\} \xrightarrow{3y-1=x^*} \left. \begin{array}{l} 2(3y-1) + y - z = 6 \\ (3y-1) - y + 2z = -1 \end{array} \right\} \rightarrow \left. \begin{array}{l} 6y - 2 + y - z = 6 \\ 3y - 1 - y + 2z = -1 \end{array} \right\} \rightarrow \left. \begin{array}{l} 7y - z = 6 + 2 \\ 2y + 2z = -1 + 1 \end{array} \right\}$$

$$\left. \begin{array}{l} 7y - z = 8 \\ 2y + 2z = 0 \end{array} \right\} \rightarrow 2y = -2z \Rightarrow y = -z \leftarrow 7(-z) - z = 8 \Rightarrow \begin{cases} -8z = 8 \rightarrow z = \frac{8}{-8} = -1 \rightarrow z = -1 \\ y = -z \rightarrow y = -(-1) = +1 \rightarrow y = +1 \\ x = 3y - 1 = 3(+1) - 1 = 2 \rightarrow x = +2 \end{cases}$$

1. Resuelve los siguientes sistemas de ecuaciones de tres incógnitas.

a.
$$\left. \begin{array}{l} 2x - 2 = 0 \\ x + y = 5 \\ 2x - y + z = 0 \end{array} \right\}$$

c.
$$\left. \begin{array}{l} x + y = 7 \\ x + z = 8 \\ y + z = 9 \end{array} \right\}$$

b.
$$\left. \begin{array}{l} x + 3y - z = 5 \\ 6y + 3z = 12 \\ 4z = 8 \end{array} \right\}$$

d.
$$\left. \begin{array}{l} x - y = z \\ 2x - z = 4 \\ x + y = 6 - z \end{array} \right\}$$

Ejemplo 2

$$\left. \begin{array}{l} 2x - y - z = 0 \\ 5x + 8y + 2z = 3 \\ -x + z = 1^* \end{array} \right\} \xrightarrow{*z=1+x} \left. \begin{array}{l} 2x - y - (1+x) = 0 \\ 5x + 8y + 2(1+x) = 3 \end{array} \right\} \rightarrow \left. \begin{array}{l} 2x - y - 1 - x = 0 \\ 5x + 8y + 2 + 2x = 3 \end{array} \right\} \rightarrow \left. \begin{array}{l} x - y = 1 \\ 7x + 8y = 3 - 2 \end{array} \right\}$$

$$\rightarrow \left. \begin{array}{l} x - y = 1 \\ 7x + 8y = 1 \end{array} \right\} \rightarrow \left. \begin{array}{l} x = 1 + y \\ 7(1+y) + 8y = 1 \end{array} \right\} \rightarrow 7 + 7y + 8y = 1 \rightarrow 15y = 1 - 7 \Rightarrow y = \frac{-6}{15} = \frac{-2}{5}$$

$$\rightarrow x = 1 + \left(\frac{-2}{5}\right) = \frac{5-2}{5} = \frac{3}{5} \rightarrow z = 1 + \frac{3}{5} = \frac{5+3}{5} = \frac{8}{5} \Rightarrow \begin{cases} x = \frac{3}{5} \\ y = \frac{-2}{5} \\ z = \frac{8}{5} \end{cases}$$

2. Resuelve los siguientes sistemas de ecuaciones de tres incógnitas.

a.
$$\left. \begin{array}{l} 3x + 2y + 5z = -3 \\ 2y = -4 \\ 3y + 4z = 2 \end{array} \right\}$$

c.
$$\left. \begin{array}{l} 2x + y - z = 5 \\ 3x + 2y = 1 \\ -x + 4y - 2z = -9 \end{array} \right\}$$

b.
$$\left. \begin{array}{l} -2x + 6y - 3z = 2 \\ 5x - 2y = 4 \\ 3x + y = 9 \end{array} \right\}$$

d.
$$\left. \begin{array}{l} x + y + z = 1 \\ 2x - 3z = 5 \\ 2y + 5z = 2 \end{array} \right\}$$