

Boletín Sistemas III – Matemáticas 4º E.S.O.

Ejemplo

$$\left. \begin{array}{l} x + 2y - 2z = 2 \\ 3x - 3y + z = -14 \\ 5x - y - 2z = -15 \end{array} \right\} \xrightarrow{\text{Despejamos una variable}} x = 2 - 2y + 2z$$

$$\xrightarrow{\text{sustituimos en las otras dos}} \left. \begin{array}{l} 3(2 - 2y + 2z) - 3y + z = -14 \\ 5(2 - 2y + 2z) - y - 2z = -15 \end{array} \right\} \Rightarrow \left. \begin{array}{l} 6 - 6y + 6z - 3y + z = -14 \\ 10 - 10y + 10z - y - 2z = -15 \end{array} \right\}$$

$$\left. \begin{array}{l} -9y + 7z = -20 \\ -11y + 8z = -25 \end{array} \right\} \rightarrow \left. \begin{array}{l} (\times 11) - 9y + 7z = -20 \\ (\times (-9)) - 11y + 8z = -25 \end{array} \right\} \rightarrow \left. \begin{array}{l} -99y + 77z = -220 \\ +99y - 72z = 225 \end{array} \right\} \rightarrow 5z = 5 \rightarrow \boxed{z = 1}$$

$$\left. \begin{array}{l} -9y + 7z = -20 \\ -11y + 8z = -25 \end{array} \right\} \rightarrow \left. \begin{array}{l} (\times 8) - 9y + 7z = -20 \\ (\times (-7)) - 11y + 8z = -25 \end{array} \right\} \rightarrow \left. \begin{array}{l} -72y + 56z = -160 \\ +77y - 56z = 175 \end{array} \right\} \rightarrow 5y = 15 \rightarrow \boxed{y = 3}$$

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

1. Resuelve el siguiente sistema de ecuaciones

a. $\left\{ \begin{array}{l} x + y - 2z = 0 \\ 2x - 3y + 3z = 4 \\ 5x - 5y + 4z = 8 \end{array} \right.$

c. $\left\{ \begin{array}{l} 3x - 4y - 2z = 2 \\ x + 5y + 3z = 5 \\ 2x + y - z = 11 \end{array} \right.$

b. $\left\{ \begin{array}{l} x + 2y - 3z = 7 \\ 2x + y - z = 6 \\ 3x - y - z = 6 \end{array} \right.$

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

2. Resuelve el siguiente sistema de ecuaciones

a. $\left\{ \begin{array}{l} x + y - 3z = 2 \\ 2x - y + z = -4 \\ 3x + y + 5z = 10 \end{array} \right.$

Sol : $x = 0; y = 5; z = 1$

b. $\left\{ \begin{array}{l} x + 2y + z = 0 \\ 2x - z = 1 \\ 3x - y - 2z = 3 \end{array} \right.$

Sol : $x = 3; y = -4; z = 5$