

Examen de Matemáticas 1º de Bachillerato CS

Noviembre 2018

Problema 1 Discutir y resolver por el método de Gauss los siguientes sistemas:

$$\left\{ \begin{array}{l} x - 3y + 2z = -5 \\ 2x + y - z = -1 \\ -x + 2y + z = 6 \end{array} \right. ; \quad \left\{ \begin{array}{l} x - y + 2z = 3 \\ 2x + y + 3z = -1 \\ x - 4y + 3z = 10 \end{array} \right.$$

Solución:

$$\left\{ \begin{array}{l} x - 3y + 2z = -5 \\ 2x + y - z = -1 \\ -x + 2y + z = 6 \end{array} \right. \text{ Sistema Compatible Determinado} \Rightarrow \left\{ \begin{array}{l} x = -1 \\ y = 2 \\ z = 1 \end{array} \right.$$
$$\left\{ \begin{array}{l} x - y + 2z = 3 \\ 2x + y + 3z = -1 \\ x - 4y + 3z = 10 \end{array} \right. \text{ Sistema Compatible Indeterminado} \Rightarrow \left\{ \begin{array}{l} x = \frac{2}{3} - \frac{5}{3}\lambda \\ y = -\frac{7}{3} + \frac{1}{3}\lambda \\ z = \lambda \end{array} \right.$$

Problema 2 Resolver los siguientes sistemas:

$$\left\{ \begin{array}{l} 3x^2 + y^2 = 7 \\ 2x - y = 0 \end{array} \right. ; \quad \left\{ \begin{array}{l} 5x \cdot y = 10 \\ x - 4y = -2 \end{array} \right.$$

Solución:

$$\left\{ \begin{array}{l} 3x^2 + y^2 = 7 \\ 2x - y = 0 \end{array} \right. \Rightarrow \left\{ \begin{array}{l} x = 1, y = 2 \\ x = -1, y = -2 \end{array} \right.$$
$$\left\{ \begin{array}{l} 5x \cdot y = 10 \\ x - 4y = -2 \end{array} \right. \Rightarrow \left\{ \begin{array}{l} x = 2, y = 1 \\ x = -4, y = -1/2 \end{array} \right.$$

Problema 3 Resolver las inecuaciones siguientes:

1. $\frac{5x-2}{24} - \frac{x-3}{8} \geq 1 - \frac{x+7}{6}$

2. $\frac{x^2-7x-18}{x^2-4x-5} \geq 0$

3. $\frac{x^2-5x-14}{x^2-3x-18} \leq 0$

Solución:

1. $\frac{5x-2}{24} - \frac{x-3}{8} \geq 1 - \frac{x+7}{6} \Rightarrow \left[-\frac{11}{6}, \infty \right)$

$$2. \frac{x^2 - 7x - 18}{x^2 - 4x - 5} \geq 0 \implies (-\infty, -2] \cup (-1, 5) \cup [9, \infty)$$

$$3. \frac{x^2 - 5x - 14}{x^2 - 3x - 18} \leq 0 \implies (-3, -2] \cup (6, 7]$$