

Examen de Matemáticas 1º de Bachillerato CS

Noviembre 2015

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

$$\left\{ \begin{array}{lcl} x+ & y- & 2z = 2 \\ 2x- & y- & z = 4 \\ 3x+ & 2y+ & z = 12 \end{array} \right. ; \quad \left\{ \begin{array}{lcl} x+ & 2y+ & z = 3 \\ 2x+ & y+ & 2z = 2 \\ x+ & 5y+ & z = 2 \end{array} \right.$$

Solución:

$$\left\{ \begin{array}{lcl} x+ & y- & 2z = 2 \\ 2x- & y- & z = 4 \\ 3x+ & 2y+ & z = 12 \end{array} \right. \text{ Sistema Compatible Determinado} \implies \left\{ \begin{array}{l} x = 3 \\ y = 1 \\ z = 1 \end{array} \right.$$
$$\left\{ \begin{array}{lcl} x+ & 2y+ & z = 3 \\ 2x+ & y+ & 2z = 2 \\ x+ & 5y+ & z = 2 \end{array} \right. \text{ Sistema Incompatible}$$

Problema 2 Resolver los siguientes sistemas:

$$\left\{ \begin{array}{l} x^2 + y^2 = 13 \\ x - y = 1 \end{array} \right. ; \quad \left\{ \begin{array}{l} x \cdot y = 4 \\ x - 2y = -7 \end{array} \right.$$

Solución:

$$\left\{ \begin{array}{l} x^2 + y^2 = 13 \\ x - y = 1 \end{array} \right. \implies \left\{ \begin{array}{l} x = 3, y = 2 \\ x = -2, y = -3 \end{array} \right.$$
$$\left\{ \begin{array}{l} x \cdot y = 4 \\ x - 2y = -7 \end{array} \right. \implies \left\{ \begin{array}{l} x = 1, y = 4 \\ x = -8, y = -1/2 \end{array} \right.$$

Problema 3 Resolver las inecuaciones siguientes:

1. $\frac{3x-1}{8} - \frac{x-4}{6} \leq 1 - \frac{x+6}{3}$
2. $\frac{x^2-7x+10}{x^2+2x-3} \geq 0$
3. $\frac{x^2-10x+21}{x^2+2x-8} \leq 0$

Solución:

1. $\frac{3x-1}{8} - \frac{x-4}{6} \leq 1 - \frac{x+6}{3} \implies (-\infty, -37/13]$
2. $\frac{x^2-7x+10}{x^2+2x-3} \geq 0 \implies (-\infty, -3) \cup (1, 2] \cup [5, \infty)$
3. $\frac{x^2-10x+21}{x^2+2x-8} \leq 0 \implies (-4, 2) \cup [3, 7]$