

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

$$\left\{ \begin{array}{l} x+ y+ z = 4 \\ 2x- 2y+ 3z = 9 \\ -x+ 2y+ 4z = 1 \end{array} \right. ; \quad \left\{ \begin{array}{l} x+ 2y- z = 1 \\ 2x+ 3y+ 2z = 2 \\ x+ 7z = 3 \end{array} \right.$$

Solución:

$$\left\{ \begin{array}{l} x+ y+ z = 4 \\ 2x- 2y+ 3z = 9 \\ -x+ 2y+ 4z = 1 \end{array} \right. \text{ Sistema Compatible Determinado} \implies \left\{ \begin{array}{l} x = 3 \\ y = 0 \\ z = 1 \end{array} \right.$$

$$\left\{ \begin{array}{l} x+ 2y- z = 1 \\ 2x+ 3y+ 2z = 2 \\ x+ 7z = 3 \end{array} \right. \text{ Sistema Incompatible}$$

Problema 2 Resolver los siguientes sistemas:

$$\left\{ \begin{array}{l} x^2 + 5y^2 = 14 \\ x + y = 4 \end{array} \right. ; \quad \left\{ \begin{array}{l} x \cdot y = 3 \\ x + 7y = 10 \end{array} \right.$$

Solución:

$$\left\{ \begin{array}{l} x^2 + 5y^2 = 14 \\ x + y = 4 \end{array} \right. \implies \left\{ \begin{array}{l} x = 3, y = 1 \\ x = 11/3, y = 1/3 \end{array} \right.$$

$$\left\{ \begin{array}{l} x \cdot y = 3 \\ x + 7y = 10 \end{array} \right. \implies \left\{ \begin{array}{l} x = 3, y = 1 \\ x = 7, y = 3/7 \end{array} \right.$$

Problema 3 Resolver las inecuaciones siguientes:

$$1. \frac{7x-3}{9} - \frac{x-2}{6} \leq 1 - \frac{x-5}{2}$$

$$2. \frac{x^2 - 7x + 10}{x^2 - 10x + 21} \geq 0$$

$$3. \frac{x^2 - 6x + 8}{x^2 - 8x + 7} \leq 0$$

Solución:

$$1. \frac{7x-3}{9} - \frac{x-2}{6} \leq 1 - \frac{x-5}{2} \implies (-\infty, 63/20]$$

$$2. \frac{x^2 - 7x + 10}{x^2 - 10x + 21} \geq 0 \implies (-\infty, 2] \cup (3, 5] \cup (7, \infty)$$

$$3. \frac{x^2 - 6x + 8}{x^2 - 8x + 7} \leq 0 \implies (1, 2] \cup [4, 7)$$