

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

$$\begin{cases} x+ & y+ & z = 4 \\ 2x- & 2y+ & 3z = 9 \\ -x+ & 2y+ & 4z = 1 \end{cases} ; \begin{cases} x+ & 2y- & z = 1 \\ 2x+ & 3y+ & 2z = 2 \\ x+ & & 7z = 3 \end{cases}$$

Solución:

$$\begin{cases} x+ & y+ & z = 4 \\ 2x- & 2y+ & 3z = 9 \\ -x+ & 2y+ & 4z = 1 \end{cases} \text{ Sistema Compatible Determinado} \implies \begin{cases} x = 3 \\ y = 0 \\ z = 1 \end{cases}$$

$$\begin{cases} x+ & 2y- & z = 1 \\ 2x+ & 3y+ & 2z = 2 \\ x+ & & 7z = 3 \end{cases} \text{ Sistema Incompatible}$$

Problema 2 Resolver los siguientes sistemas:

$$\begin{cases} x^2 + 5y^2 = 14 \\ x + y = 4 \end{cases} ; \begin{cases} x \cdot y = 3 \\ x + 7y = 10 \end{cases}$$

Solución:

$$\begin{cases} x^2 + 5y^2 = 14 \\ x + y = 4 \end{cases} \implies \begin{cases} x = 3, y = 1 \\ x = 11/3, y = 1/3 \end{cases}$$

$$\begin{cases} x \cdot y = 3 \\ x + 7y = 10 \end{cases} \implies \begin{cases} x = 3, y = 1 \\ x = 7, y = 3/7 \end{cases}$$

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:

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

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

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