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

$$\left\{\begin{array}{rrrcl} x- & y+ & z= & 2 \\ 2x+ & 3y+ & 2z= & 5 \\ x+ & 9y+ & z= & 4 \end{array}\right. ; \quad \left\{\begin{array}{rrrcl} x- & 2y+ & 2z= & 0 \\ 2x+ & y+ & 2z= & 8 \\ 3x- & y+ & z= & 5 \end{array}\right.$$

**Solución:**

$$\left\{\begin{array}{rrrcl} x- & y+ & z= & 2 \\ 2x+ & 3y+ & 2z= & 5 \\ x+ & 9y+ & z= & 4 \end{array}\right. \text{ Sistema Compatible Indeterminado} \Longrightarrow \left\{\begin{array}{l} x = 11/5 - \lambda \\ y = 1/5 \\ z = \lambda \end{array}\right.$$

$$\left\{\begin{array}{rrrcl} x- & 2y+ & 2z= & 0 \\ 2x+ & y+ & 2z= & 8 \\ 3x- & y+ & z= & 5 \end{array}\right. \text{ Sistema Compatible Determinado} \Longrightarrow \left\{\begin{array}{l} x = 2 \\ y = 2 \\ z = 1 \end{array}\right.$$

**Problema 2** Resolver las ecuaciones:

1. $\log(4-x) - \log(x+5) = 1$
2. $\log(7-x^2) - \log x = 1 + \log(x-5)$
3. $2\log(3-x) - 1 = \log(x-3)$
4. $3^{x^2-1} \cdot 9^{3x-2} = 27^{x+2}$
5. $7^{2x-1} + 7^{x-1} - 2 = 0$

**Solución:**

1. $\log(4-x) - \log(x+5) = 1 \Longrightarrow \log \dfrac{4-x}{x+5} = \log 10 \Longrightarrow$

   $11x = -46 \Longrightarrow x = -\dfrac{46}{11}$.

2. $\log(7-x^2) - \log x = 1 + \log(x-5) \Longrightarrow \log \dfrac{7-x^2}{x} = \log 10(x-5) \Longrightarrow$
   $11x^2 - 50x - 7 = 0 \Longrightarrow x = 4,68$, (no vale) $x = -0,14$(no vale).

3. $2\log(3-x) - 1 = \log(x-3) \Longrightarrow x^2 - 16x + 39 = 0 \Longrightarrow x = 13$, (no vale) $x = 3$, (no vale).

4. $$3^{x^2-1} \cdot 9^{3x-2} = 27^{x+2} \Longrightarrow x^2 + 3x - 11 = 0 \Longrightarrow \left\{\begin{array}{l} x = 2,14 \\ x = -5,14 \end{array}\right.$$

5.

$$7^{2x-1}+7^{x-1}-2=0 \Longrightarrow t^2+t-14=0 \Longrightarrow \begin{cases} t=3,27 \Longrightarrow x=0,61 \\ t=-4,27 \text{ no vale} \end{cases}$$