

**Examen de Matemáticas 1º de Bachillerato CN**  
**Octubre 2014**

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

$$\begin{cases} x+ & y- & z = & 3 \\ 2x- & y+ & 2z = & 2 \\ x- & 5y+ & 7z = & -5 \end{cases} ; \begin{cases} x+ & 2y- & z = & 2 \\ 2x- & y+ & 3z = & 9 \\ 3x+ & y- & z = & 2 \end{cases}$$

**Solución:**

$$\begin{cases} x+ & y- & z = & 3 \\ 2x- & y+ & 2z = & 2 \\ x- & 5y+ & 7z = & -5 \end{cases} \text{ Sistema Compatible Indeterminado} \implies \begin{cases} x = 5/3 - 1/3\lambda \\ y = 4/3 + 4/3\lambda \\ z = \lambda \end{cases}$$
$$\begin{cases} x+ & 2y- & z = & 2 \\ 2x- & y+ & 3z = & 9 \\ 3x+ & y- & z = & 2 \end{cases} \text{ Sistema Compatible Determinado} \implies \begin{cases} x = 1 \\ y = 2 \\ z = 3 \end{cases}$$

**Problema 2** Resolver las ecuaciones:

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

**Solución:**

1.  $\log(5 - x) - \log(x + 2) = 1 \implies \log \frac{5 - x}{x + 2} = \log 10 \implies$

$$11x = -15 \implies x = -\frac{15}{11}.$$

2.  $\log(3 - x^2) - \log x = 1 + \log(x - 2) \implies \log \frac{3 - x^2}{x} = \log 10(x - 2) \implies 11x^2 - 20x - 3 = 0 \implies x = 1,957505690, (\text{no vale}) \quad x = -0,1393238722(\text{no vale}).$

3.  $2 \log(2 - x) - 1 = \log(x - 1) \implies x^2 - 14x + 14 = 0 \implies x = 12,91607978, (\text{no vale}) \quad x = 1,083920216.$

4.

$$3^{x^2-2} \cdot 9^{2x-1} = 27^{x+1} \implies x^2 + x - 7 = 0 \implies \begin{cases} x = 2,192582403 \\ x = -3,192582403 \end{cases}$$

5.

$$3^{2x-1} + 3^{x-1} - 2 = 0 \implies t^2 + t - 6 = 0 \implies \begin{cases} t = 2 \implies x = 0,6309297535 \\ t = -3 \text{ no vale} \end{cases}$$