

Examen de Matemáticas 1º de Bachillerato CN

Octubre 2017

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

$$\begin{cases} x+ & 2y- & z = & 3 \\ 2x- & y+ & z = & -4 \\ 3x+ & y- & 2z = & -1 \end{cases} ; \begin{cases} x+ & y- & 2z = & 2 \\ 2x+ & y+ & z = & 3 \\ 3x- & y+ & 8z = & 0 \end{cases}$$

Solución:

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

$$\begin{cases} x+ & y- & 2z = & 2 \\ 2x+ & y+ & z = & 3 \\ 3x- & y+ & 8z = & 0 \end{cases} \text{ Sistema Compatible Determinado} \implies \begin{cases} x = 0 \\ y = 8/3 \\ z = 1/3 \end{cases}$$

Problema 2 Resolver las ecuaciones:

- $\log(4-x) - \log(x-3) = 2$
- $\log(2-x^2) - \log(x-1) = 1 + \log x$
- $2\log(3-x) - 1 = \log(x+7)$
- $5^{3x^2-1} \cdot 125^{x+1} = 25^{x+6}$
- $7^{2x-1} + 7^{x+1} - 2 = 0$

Solución:

$$1. \log(4-x) - \log(x-3) = 2 \implies \log \frac{4-x}{x-3} = \log 100 \implies$$

$$101x = 304 \implies x = \frac{304}{101}.$$

$$2. \log(2-x^2) - \log(x-1) = 1 + \log x \implies \log \frac{2-x^2}{x-1} = \log 10x \implies$$
$$11x^2 - 10x - 2 = 0 \implies x = 1,08, \quad x = -0,17(\text{no vale}).$$

$$3. 2\log(3-x) - 1 = \log(x+7) \implies x^2 - 16x - 61 = 0 \implies x = -3,18, \quad x = 19,18, \quad (\text{no vale}).$$

4.

$$5^{3x^2-1} \cdot 125^{x+1} = 25^{x+6} \implies 3x^2 + x - 10 = 0 \implies \begin{cases} x = -2 \\ x = 1,67 \end{cases}$$

5.

$$7^{2x-1} + 7^{x+1} - 2 = 0 \implies t^2 + 49t - 14 = 0 \implies \begin{cases} t = 0,284 \implies x = -0,65 \\ t = -49,284 \text{ no vale} \end{cases}$$

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