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

$$\left\{\begin{array}{rrrcl} x+ & y+ & z= & 4 \\ 2x+ & y- & z= & 3 \\ x+ & 2y+ & 4z= & 9 \end{array}\right. ; \quad \left\{\begin{array}{rrrcl} x+ & y+ & 2z= & 7 \\ 2x- & y+ & z= & 5 \\ x+ & y- & z= & 1 \end{array}\right.$$

Solución:

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

$$\left\{\begin{array}{rrrcl} x+ & y+ & 2z= & 7 \\ 2x- & y+ & z= & 5 \\ x+ & y- & z= & 1 \end{array}\right. \text{ Sistema Compatible Determinado} \Longrightarrow \left\{\begin{array}{l} x=2 \\ y=1 \\ z=2 \end{array}\right.$$

Problema 2 Resolver las ecuaciones:

1. $\log(6-x)-\log(x+1)=1$
2. $\log(2-x^2)-\log x=1+\log(x-1)$
3. $2\log(1-x)-1=\log x$
4. $2^{x^2+2}\cdot 4^{x-3}=8^{x+1}$
5. $4^{x-1}-2^{x+1}-3=0$

Solución:

1. $\log(6-x)-\log(x+1)=1 \Longrightarrow \log\dfrac{6-x}{x+1}=\log 10 \Longrightarrow$

   $11x=-4 \Longrightarrow x=-\dfrac{4}{11}$.

2. $\log(2-x^2)-\log x=1+\log(x-1) \Longrightarrow \log\dfrac{2-x^2}{x}=\log 10(x-1) \Longrightarrow$ $11x^2-10x-2=0 \Longrightarrow x=1,077786781,\ x=-0,1686958727$(no vale).

3. $2\log(1-x)-1=\log x \Longrightarrow x^2-12x+1=0 \Longrightarrow x=0,084,\ x=11,916$(no vale).

4. $$2^{x^2+2}\cdot 4^{x-3}=8^{x+1} \Longrightarrow x^2-x-7=0 \Longrightarrow \left\{\begin{array}{l} x=3,192582403 \\ x=-2,192582403 \end{array}\right.$$

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5.

$$4^{x-1}-2^{x+1}-3=0 \Longrightarrow t^2-8t-12=0 \Longrightarrow \begin{cases} t=9,291502622 \Longrightarrow x=3,215911928 \\ t=-1,291502622 \text{ no vale} \end{cases}$$

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