Examen de Matemáticas 1º de Bachillerato

Octubre 2012

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

$$\left\{\begin{array}{rrrcl} 3x+ & 3y- & z= & 8 \\ x+ & y- & 2z= & 1 \\ x- & 2y+ & z= & 1 \end{array}\right. ; \quad \left\{\begin{array}{rrrcl} x+ & 2y- & z= & 3 \\ x+ & y+ & 3z= & 2 \\ x+ & 3y- & 5z= & 1 \end{array}\right.$$

Solución:

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

$$\left\{\begin{array}{rrrcl} x+ & 2y- & z= & 3 \\ x+ & y+ & 3z= & 2 \\ x+ & 3y- & 5z= & 1 \end{array}\right. \text{ Sistema Incompatible}$$

Problema 2 Resolver los siguientes sistemas:

$$\left\{\begin{array}{l} x^2+5y^2=9 \\ x-3y=-1 \end{array}\right. ; \quad \left\{\begin{array}{l} x\cdot y=6 \\ 4x-y=5 \end{array}\right.$$

Solución:

$$\left\{\begin{array}{l} x^2+5y^2=9 \\ x-3y=-1 \end{array}\right. \Longrightarrow \left\{\begin{array}{c} x=2,\ y=1 \\ x=-19/7,\ y=-4/7 \end{array}\right.$$

$$\left\{\begin{array}{l} x\cdot y=6 \\ 4x-y=5 \end{array}\right. \Longrightarrow \left\{\begin{array}{c} x=2,\ y=3 \\ x=-3/4,\ y=-8 \end{array}\right.$$

Problema 3 Resolver las inecuaciones siguientes:

1. $\dfrac{5x-1}{2}-\dfrac{x-2}{6}\leq 1-\dfrac{x+3}{2}$
2. $\dfrac{x^2+6x-7}{x^2-2x-3}\geq 0$
3. $\dfrac{x^2-3x-10}{x^2-7x+6}\leq 0$

Solución:

1. $\dfrac{5x-1}{2}-\dfrac{x-2}{6}\leq 1-\dfrac{x+3}{2} \Longrightarrow (-\infty,-2/17]$
2. $\dfrac{x^2+6x-7}{x^2-2x-3}\geq 0 \Longrightarrow (-\infty,-7]\cup(-1,1]\cup(3,\infty)$
3. $\dfrac{x^2-3x-10}{x^2-7x+6}\leq 0 \Longrightarrow [-2,1)\cup[5,6)$