EQUATIONS TEST – 3º ESO

Exercise 1: (1.5 ptos) Solve:

a) $\dfrac{x+1}{x-1}=\dfrac{2x-1}{x+1} \rightarrow \begin{cases} x=0 \\ x=5 \end{cases}$

b) $(x-4)^2+(x-2)^2=34 \rightarrow \begin{cases} x=-1 \\ x=7 \end{cases}$

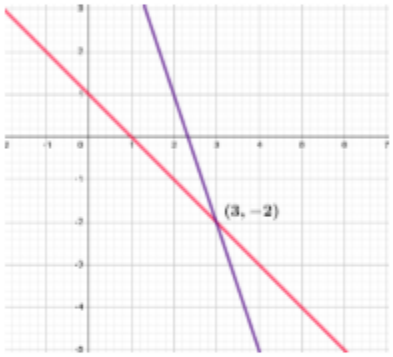
Exercise 2: (2.5 ptos) Solve and classify the following systems of equations using the indicated method:

a) $\left.\begin{matrix} 3x+2y=5 \\ 4x-y=14 \end{matrix}\right\}$ Substitution $\begin{cases} x=3 \\ y=-2 \end{cases} \rightarrow$ Consistent independent

b) $\left.\begin{matrix} 4x-2y=3 \\ 6x-3y=7 \end{matrix}\right\}$ Elimination $\nexists$ solution $\rightarrow$ Inconsistent

c) $\left.\begin{matrix} x-7y=-5 \\ 2x-5y=1 \end{matrix}\right\}$ $\begin{cases} x=32/9 \\ y=11/9 \end{cases} \rightarrow$ Consistent independent

d) $\left.\begin{matrix} x+y=1 \\ 3x+y=7 \end{matrix}\right\}$ Graphical



Exercise 3: (0.75 ptos) Find the value of k so that the polynomial $P(x)=x^3-kx^2+3x-2$ is a multiple of $(x+2)$ $k=-4$

Exercise 4: (1.5 ptos) Divide the following polynomials and indicate the quotient and the remainder:

a) $(x^4+5x^3-4x+7):(x+1)=$ Quotient: x^3+4x^2-4x Remainder: 7

b) $(x^4-5x^3+4x^2-7):(x^2-2)=$ Quotient: x^2-5x+6 Remainder: $-10x+5$

Exercise 5: (3 ptos) Find the roots of these polynomials and factorize them:

a) $P(x)=x^3+7x^2+16x+12$ $x=-3,\ x=-2$ double, $(x+3)(x+2)^2$

b) $Q(x)=x^5-10x^3+9x$ $x=0,\ x=\pm1,\ x=\pm3,$ $x(x+3)(x+1)(x-1)(x-3)$

c) $R(x)=x^4+2x^3-x^2+4x-6$ $x=-3,\ x=1,$ $(x-1)(x+3)(x^2+2)$

Exercise 6: (0.75 ptos)

Two vegetal sandwiches and three lattes cost 15.2€, while three vegetal sandwiches and two lattes cost 19.3€. Find the price of each product.

A latte costs 1.4€, while a vegetal sandwich costs 5.5€