EQUATIONS - FUNCTIONS

3º ESO

Exercise 1: (2.5 points)

a) Find the value of k so that when dividing the polynomial $P(x)=x^3+kx^2+3x+7$ by $(x+2)$ the remainder is 13 (0.75)

b) Divide (x^4+5x^2-3x+4) by (x^2-3) (1)

c) Divide (x^4+7x^3-4x+1) by $(x-2)$ (0.75)

Exercise 2: (3 ptos) Factorize the following polynomials and indicate their roots:

a) $P(x)=x^4+x^3-12x^2+4x+16$ (1.25)

b) $Q(x)=x^3+2x^2+4x+8$ (0.75)

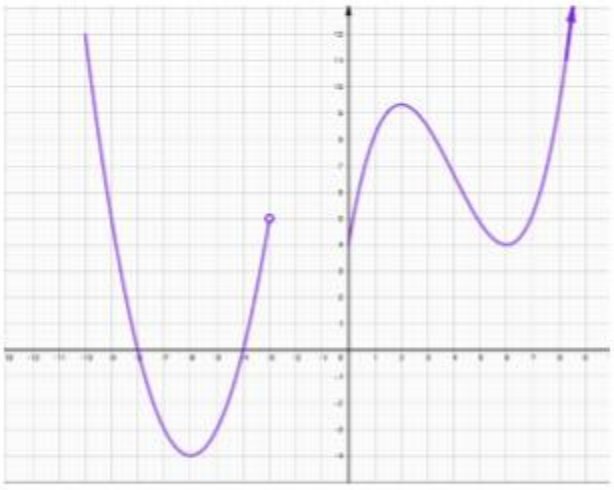
c) $R(x)=x^6-29x^4+100x^2$ (1)

Exercise 3: (1 pto) I've factorized the polynomial $P(x)$ and I got

$$P(x)=3x^4+x^3+2x^2+5=x(x+2)(x+1)^2(x-5)$$

Find at least five mistakes

Exercise 4: (2 points) Given the following graph of a certain function:



a) Indicate its domain and its image.

b) Determine the points where the function crosses the axes

c) Study its monotony

d) Study the extrema

Exercise 5: (1.5 points) Indicate the domain of the following functions:

a) $f(x)=\dfrac{x^2-1}{x^2-9x}$

b) $f(x)=\sqrt[8]{x+7}$

c) $f(x)=\dfrac{5x+3}{\sqrt{x-5}}$