POLYNOMIALS AND EQUATIONS TEST – 3º ESO

Exercise 1: (1.5 points) Given the polynomials:

$P(x) = 5x^4 - 7x^2 + 5x - 8$

$Q(x) = -8x^4 - 5x^3 + 9x - 5$

$R(x) = 2x^2 - x$

Work out the value of the following operations:

a) P + Q =

b) P - Q =

c) P · R =

Exercise 2: (1 point) Expand these expressions using notable products:

a) $(x-9)^2 =$

b) $(5x+3)^2 =$

c) $(7x-5)(7x+5) =$

d) $(2x^5y^7v^4 - z^6w)^2 =$

Exercise 3: (1 point) Find the numerical value of the polynomial $P(x) = x^3 - 3x^2 - 5x + 2$ when:

a) x = 2

b) x = -1

c) x = 0

Exercise 4: (1.25 points) Extract all the possible common factors from the next algebraic expressions and simplify them when possible:

a) $30a^3b^5c^7 - 5ab^2c^4 + 15a^2b^4c^5 =$

b) $\dfrac{(3x^2+9x)(x^2-49)}{(6x^3+18x^2)(x^2-14x+49)}$

Exercise 5: (0.5 points) Write an equation whose solutions are x = 0 triple, x = -2 double and x = 7. What's its degree?

Exercise 6: (0.5 points) The surface of a circle is 153.94 cm^2. Work out the value of its radius.

Exercise 7: (0.75 points) Aumento un número en tres unidades y elevo el resultado al cuadrado, luego le resto el doble de dicho número y obtengo 201. ¿De qué número se trata?

Exercise 8: (0.75 points) In an triangle, the base is 7m longer than the height and its area is 130m^2. Work out the value of both the base and the height

Exercise 9: **(1.25 points)** Solve the following linear equations:

a) $\frac{5x+3}{4}-\frac{2x-5}{5}=\frac{x+2}{10}-1$

b) $\frac{x-5}{x+3}=\frac{2}{7}$

Exercise 10: **(1.5 points)** Solve the following quadratic equations:

a) $x^2-6x-16=0$

b) $x^2+8x+16=0$

c) $9x^2-16=0$

d) $4x^2+16=0$

e) $8x^2+16x=0$

Exercise 11: **(1 point)** It's up to you

$(a+b)^5=$