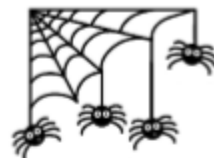**REAL NUMBERS, POLYNOMIALS AND FRACTIONS TEST - 4º ESO**

Exercise 1: (1 point) Rationalize:

a) $\dfrac{1}{\sqrt{2}} =$

b) $\dfrac{21}{\sqrt[9]{7^4}} =$

c) $\dfrac{4\sqrt{7}}{\sqrt{7}-\sqrt{3}} =$

Exercise 2: (2 points) Work out, express as radicals and simplify:

a) $\sqrt[3]{5^2} \cdot \sqrt{5^7} \cdot \sqrt[4]{5^3} =$

b) $\dfrac{\sqrt{2^3 \cdot 3^{-5}}}{\sqrt[9]{2^{-4} \cdot 3^7}} =$

c) $7^{2/5} \cdot 7^{-4/3} : 7^{-2/7} =$

d) $\sqrt{1568} + 3\sqrt{450} - 5\sqrt{128} =$

Exercise 3: (1 point) The Wall that defended Westeros was 555.6 km long.
 a) Find the percentage error if I round it to 550 km
 b) Do you think that's a good approximation?

Exercise 4: (1 point) Find the roots and factorize the polynomial:

$$P(x) = x^5 + x^4 - 34x^3 - 34x^2 + 225x + 225$$

Exercise 5: (1 point) Study the following unions and intersections of intervals:
 a) $(-\infty, 2] \cup [1, 7) =$
 b) $(-5, -2] \cap (-3, 1] =$
 c) $(3, 7) \cap [7, 12] =$

Exercise 6: (1 point) Work out:
 a) $2.57 \cdot 10^{-6} - 3.4 \cdot 10^{-5} + 9.28 \cdot 10^{-4} =$
 b) $(7.26 \cdot 10^{-2}) \cdot (3.97 \cdot 10^{-5}) =$
 c) $(2.71 \cdot 10^{-5}) : (7.29 \cdot 10^{-9}) =$

Exercise 7: (3 points) Work out the value of the following expressions:

a) $\dfrac{x-2}{x^2+2x-3} - \dfrac{3}{1-x} - \dfrac{5x}{x^2-1} =$ (1.25)

b) $\dfrac{(5x^3 - 15x^2)(x^2 + 6x + 9)}{(x^2 - 9)(10x^4 + 30x^3)} =$ (1)

c) $\dfrac{x^2 - 4}{x^2 - 1} : \dfrac{x^2 + 4x + 4}{x^2 - 2x + 1} =$ (0.75)