

**EXAMEN NÚMEROS REALES, POLINOMIOS Y FRACCIONES ALGEBRAICAS - 4º ESO B**

**Exercise 1: (1 pto)** Clasifica los siguientes números y represéntalos en la recta real. ¿Cuáles de ellos son números reales?

$$-5 ; \sqrt{3} ; -2/3 ; 4.1 ; 15/5 ; \sqrt[3]{-8} ; \pi ; -\sqrt{9} ; 0.43535\dots ; \sqrt{-16}$$

**Exercise 2: (0.75 points)** Write as an interval, an inequality and represent on the number line

a)  $-2 \leq x < 3$

b)  $(-\infty, -5]$

c)  $(-7, 3) \cap [-3, 1)$

**Exercise 3: (1 point)** Round and chop the number  $e \approx 2.7182818285$  to five significant figures and estimate both the absolute and relative errors. Which approximation is better? Why?

**Exercise 4: (1 point)** Work out the value of the following expressions:

a)  $5.32 \cdot 10^{-4} + 3.2 \cdot 10^{-6} - 1.75 \cdot 10^{-2} =$

b)  $(1.53 \cdot 10^{-5}) : (7.4 \cdot 10^{-9}) =$

**Exercise 5: (0.75 points)** The distance between the Earth and the Moon is  $3.8 \cdot 10^5$  km. How long would it take a space ship that travels at a speed of 200 m/s to reach its destiny?

**Exercise 6: (0.75 ptos)** Racionaliza:

a)  $\frac{10}{\sqrt{5}}$

b)  $\frac{8\sqrt{7}}{3\sqrt[5]{4^2}}$

c)  $\frac{\sqrt{8} - \sqrt{6}}{\sqrt{8} + \sqrt{6}}$

**Exercise 7: (0.5 ptos)** Opera y simplifica:

$$\frac{\sqrt{5^3 3^4} \cdot \sqrt[4]{2^5 5^8}}{\sqrt[3]{5^4 2^4}} =$$

**Exercise 8: (2 ptos)** Factor these polynomials and write their roots:

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

b)  $Q(x) = x^4 + 9x^3 + 29x^2 + 39x + 18$

**Exercise 9: (0.75 ptos)** Find the value of  $m$  so that when dividing the polynomial  $P(x) = 2x^3 - mx^2 + 5x - 7$  by  $(x + 3)$  the remainder is 10

**Exercise 10: (1.5 ptos)** Calcula y desarrolla cuanto sea posible

a)  $\frac{5x}{x^2 + 7x + 10} - \frac{x - 1}{x^3 - 4x} =$

b)  $\frac{7 - x}{x^2 - x} + \frac{x^2 + x}{x^2 - 2x + 1} =$