

EXAMEN NÚMEROS REALES, POTENCIAS Y RAÍCES - 3º ESO

Exercise 1: (1.5 points) Work out the value of the following expressions:

- a) $5.12 \cdot 10^2 - 4.37 \cdot 10^5 - 1.83 \cdot 10^7 =$
- b) $-3.51 \cdot 10^{-2} + 7.92 \cdot 10^{-3} - 5.84 \cdot 10^{-6} =$
- c) $(3.57 \cdot 10^3) \cdot (5.71 \cdot 10^{-7}) =$
- d) $(2.37 \cdot 10^{-5}) : (7.94 \cdot 10^{-7}) =$

Exercise 2: (1 point)

- a) The Earth's mass is about 5 973 600 000 000 000 000 000 000 kg. Write that number using scientific notation.
- b) The poliomyelitis virus has a radius of $1.6 \cdot 10^{-8}$ m. How many viruses will I need to cover a distance of fifteen meters?

Exercise 3: (0.75 points) Classify these numbers and place them on the number line. Which ones of them are real numbers?

$$\pi ; 12/4 ; \sqrt{-16} ; 6.77777\ldots ; -\sqrt{9} ; -2 ; \sqrt{5} ; 2/3 ; \sqrt[3]{-27}$$

Exercise 4: (0.75 points) Round and truncate the number $e \approx 2'7182818285$ to five significant figures (to the ten-thousandths) and estimate both the absolute and relative errors.

Exercise 5: (1 point) Write as an interval and an inequality, and place them on the number line

- a) $(-7, -3) \cup [-3, 5]$
- b) $-3 \leq x < -5$
- c) $[-5, \infty)$
- d) $[-5, 2) \cap (0, 3]$

Exercise 6: (1 point) Convert the following decimal numbers into fractions

- a) 7.49289
- b) 5.22...
- c) 3.527777777...
- d) π

Ejercicio 7: (2.5 pts) Efectúa y expresa en forma de raíz cuando sea posible:

- a) $\frac{5}{6} + \frac{3}{5} \cdot \frac{7}{2} - \left(\frac{3}{2}\right)^2 + \frac{9}{10} : \frac{2}{3} =$
- b) $3\sqrt{27} - 9\sqrt{32} + 5\sqrt{243} - \sqrt{75} + \sqrt{2} =$
- c) $(3^{-1} \cdot 3^{-3}) : (3 \cdot 3^{-5}) =$
- d) $\left(\frac{3}{7}\right)^6 \cdot \frac{1}{7} \cdot \left(\frac{7}{3}\right)^{-3} \cdot 7^{-2} \cdot 3^{-4} =$
- e) $3^{3/2} \cdot 5^{5/6} \cdot 3^{1/10} \cdot 5^{2/5} =$

Ejercicio 8: (0.75 pts) Extrae todos los factores que puedas de las siguientes raíces:

a) $\sqrt{162000} =$

b) $\sqrt[5]{\frac{x^{20}y^4z^{12}}{w^9}} =$

Ejercicio 9: (0.75 pts) Calcula, simplifica y extrae factores si fuera posible:

$$\frac{\sqrt[5]{3^{-2} \cdot 5^3} \cdot \sqrt[4]{7^{-3} \cdot 3^5}}{\sqrt{5^4 \cdot 3^{15}}} =$$