REAL NUMBERS, POWERS AND ROOTS TEST - 3° ESO

Exercise 1: (1 point) A couple of weeks ago, the ExoMars spacecraft, Schiaparelli, crashed against the surface of the planet due to a computer software bug. A crying shame. Knowing that the distance between Earth and Mars is 78 339 804.97 km:

a) Write that number using scientific notation.

b) Find the percentage error if we approximate that value to 78 340 000 km.

Exercise 2: (1.5 points) Work out the value of the following expressions:

a) $3.27 \cdot 10^{8} - 5.09 \cdot 10^{6} + 8.47 \cdot 10^{9} =$

b) $1.23 \cdot 10^{-5} - 3.29 \cdot 10^{-3} + 9.57 \cdot 10^{-4} =$

c) $(7.38 \cdot 10^{5}) \cdot (4.72 \cdot 10^{-9}) =$

d) $(5.64 \cdot 10^{4}) : (7.95 \cdot 10^{-9}) =$

Exercise 3: (1 point) Classify the following numbers

$\sqrt{27}$; -3.12 ; 3^{-2} ; $34.9\overline{72}$; $\sqrt[4]{16}$; $0.1234567\cdots$; $(-2)^{5}$; $\sqrt{-49}$

Exercise 4: (1 point) Turn these decimal numbers into fractions:

a) $14.\overline{439} =$

b) $7.2\overline{894} =$

c) $4.2525252 =$

d) $\sqrt{7} =$

Exercise 5: (1.5 points) Work out:

a) $(2^{5} \cdot 2^{-7}) : (2 : 2^{3}) =$

b) $(x^{-4} : x^{5}) \cdot (x^{3})^{-2} =$

c) $(y \cdot y^{-3})^{-4} : y^{-8} =$

Exercise 6: (0.75 points) Work out:

a) $(-2)^{-5} =$

b) $\left(\frac{1}{3}\right)^{-4} =$

c) $(-5)^{-2} =$

Exercise 7: (1.5 points) Work out the value of the following expressions:

a) $\left(1 - \frac{3}{5}\right)^{-2} + \frac{2}{5} \cdot \frac{5}{4} - \left(\frac{2}{3} : \frac{1}{5}\right)^{-1} =$

b) $\sqrt{162} - 2\sqrt{175} + 5\sqrt{128} - \sqrt{343} =$

c) $\frac{2^{-10} \cdot 3^{7} \cdot 2^{3} \cdot 3^{-2}}{2^{4} \cdot 3^{-4} \cdot 2^{-1} \cdot 3^{10}} =$

Exercise 8: (0.75 points) Simplify the following roots:

a) $\sqrt{32400} =$

b) $\sqrt[7]{\frac{x^{12} y^{25} z^{28}}{w^{14}}} =$

Exercise 9: (1 point) Work out, and simplify if possible:

$$\frac{\sqrt{2^{3} \cdot 5^{-2}} \cdot \sqrt[6]{2^{-5} \cdot 7^{-1}}}{\sqrt[4]{5^{5} \cdot 7^{-4}}} =$$