REAL NUMBERS, POWERS AND ROOTS TEST - 3º ESO

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

a) $\sqrt{32400} = 180$

b) $\sqrt[7]{\dfrac{x^{12}\,y^{25}\,w^{-14}}{z^{-28}}} = \dfrac{z^4 xy^3}{w^2}\cdot\sqrt[7]{x^5 y^4}$

Exercise 2: **(1 point)** Find the percentage error when rounding $\sqrt{5}$ to the nearest hundredths

$E_p = 0.18\%$

Exercise 3: **(2 points)** Work out:

a) $2.97\cdot10^6 - 9.39\cdot10^5 + 3.42\cdot10^7 = 3.62\cdot10^7$

b) $7.15\cdot10^{-3} - 3.29\cdot10^{-5} + 7.32\cdot10^{-4} = 7.85\cdot10^{-3}$

c) $\left(4.12\cdot10^7\right):\left(9.42\cdot10^3\right) = 4.37\cdot10^3$

d) $\left(2.39\cdot10^{-8}\right)\cdot\left(5.27\cdot10^{-4}\right) = 1.26\cdot10^{-11}$

Exercise 4: **(3.5 points)** Work out, express as a single radical and simplify if possible:

a) $5\sqrt{28} + \sqrt{63} - 3\sqrt{112} = \sqrt{7}$ (1)

b) $\sqrt[5]{x^4}\cdot\sqrt[3]{x^{-2}} : \sqrt[7]{x^{-1}} = \sqrt[105]{x^{29}}$ (0.75)

c) $\dfrac{\sqrt[6]{2^2\cdot7^{-3}}\cdot\sqrt[5]{2^{-5}\cdot7^4}}{\sqrt{2\cdot7^{-2}}} = \dfrac{7}{2}\cdot\sqrt[30]{\dfrac{7^9}{2^5}}$ (1.25)

d) $b^{-7/2} : b^{2/5} = \dfrac{1}{b^3}\cdot\sqrt[10]{\dfrac{1}{b^9}}$ (0.5)

Exercise 5: **(1 point)** Classify the following numbers:

a) $\dfrac{7}{5} \rightarrow \mathbb{Q}, \mathbb{R}$

b) $\sqrt{25} \rightarrow \mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}$

c) $\sqrt{7} \rightarrow I\!I, \mathbb{R}$

d) $\sqrt[3]{-27} \rightarrow \mathbb{Z}, \mathbb{Q}, \mathbb{R}$

e) $\sqrt[8]{-1} \rightarrow \nexists$

Exercise 6: **(1.5 points)** Study the following unions and intersections of intervals. Express them as inequalities too:

a) $[-2,0] \cup (-1,3) = [-2,3) \rightarrow -2 \leq x < 3$

b) $[-2,8] \cap (-2,5] = (-2,5] \rightarrow -2 < x \leq 5$

c) $(-7,1] \cap [1,+\infty) = \{1\} \rightarrow x = 1$