

EXAMEN MATEMÁTICAS 3º ESO. POTENCIAS Y RAÍCES.

1. a)  $2^{-3} = \frac{1}{8}$

d)  $(-34)^0 = 1$

b)  $(\frac{5}{3})^{-2} = (\frac{3}{5})^2 = \frac{9}{25}$

e)  $(-\frac{1}{2})^{-3} = (-2)^3 = -8$

c)  $(-4)^{-2} = (-\frac{1}{4})^2 = \frac{1}{16}$

f)  $(-\frac{1}{3})^{-4} = (-3)^4 = 81$

2. a)  $\frac{6^{10} \cdot 25^6}{(2 \cdot 5)^{10} \cdot 3^{12}} = \frac{\cancel{2}^{10} \cdot 3^{10} \cdot 5^{12}}{\cancel{2}^{10} \cdot 5^{10} \cdot 3^{12}} = \frac{5^2}{3^2} = \frac{25}{9}$

b)  $(\frac{4}{3} : \frac{1}{2})^{-1} [(-2)^{35} : (-2)^{32}] = (\frac{8}{3})^{-1} \cdot (-2)^3 = \frac{3}{8} \cdot (-8) = -3$

c)  $[(\frac{7}{2})^{-14} : (\frac{7}{2})^{-12}]^2 \cdot (\frac{2}{7})^{-6} = [(\frac{7}{2})^{-2}]^2 \cdot (\frac{2}{7})^{-6} = (\frac{7}{2})^{-4} \cdot (\frac{7}{2})^6 = (\frac{7}{2})^2 = \frac{49}{4}$

d)  $\frac{[(3 \cdot 7)^3]^8 \cdot 21^{-10}}{49^6 \cdot 9^8} = \frac{3^{24} \cdot 7^{24} \cdot 3^{-10} \cdot 7^{-10}}{7^{12} \cdot 3^{16}} = \frac{3^{14} \cdot 7^{14}}{7^{12} \cdot 3^{16}} = \frac{7^2}{3^2} = \frac{49}{9}$

3. a)  $\sqrt[6]{4^3} = \sqrt[6]{2^6} = 2$

b)  $\sqrt[4]{\frac{625}{243}} = \sqrt[4]{\frac{5^4}{3^5}} = \frac{5}{3} \sqrt[4]{\frac{1}{3}}$

c)  $\frac{\sqrt{56}}{\sqrt{7}} = \sqrt{\frac{2^3 \cdot 7}{7}} = \sqrt{2^3} = 2\sqrt{2}$

4.  $\sqrt[3]{9} \cdot \sqrt[3]{54} \cdot \sqrt[4]{72} = \sqrt[3]{9^4} \sqrt[3]{54^4} \sqrt[4]{72^3} = \sqrt[3]{3^8 \cdot (2 \cdot 3^3)^4} \sqrt[4]{(2^3 \cdot 3^2)^3} = \sqrt[3]{3^8 \cdot 2^4 \cdot 3^{12} \cdot 2^9 \cdot 3^6} = \sqrt[3]{2^{13} \cdot 3^{26}} = 3^2 \cdot 2 \sqrt[3]{2 \cdot 3^2}$

$$5. a) 5 - \sqrt[3]{a} + 5\sqrt[3]{a} - 8\sqrt[3]{a} + 10 = 15 - 4\sqrt[3]{a}$$

$$b) \sqrt{175} + \sqrt{28} - 5\sqrt{63} = \sqrt{5^2 \cdot 7} + \sqrt{2^2 \cdot 7} - 5\sqrt{3^2 \cdot 7} = 5\sqrt{7} + 2\sqrt{7} - 15\sqrt{7} = -8\sqrt{7}$$

6. 20.500.000.000 bananas por , 50 millones hab

$$a) 2,05 \cdot 10^{10}$$

$$b) \frac{2,05 \cdot 10^{10}}{5 \cdot 10^7} = 0,41 \cdot 10^3 = 4,1 \cdot 10^2 \text{ bananas}$$

$$\begin{array}{r} 2,05 \overline{) 10} \\ \underline{05} \phantom{0} \\ 05 \phantom{0} \\ \underline{0} \phantom{0} \\ 0 \end{array}$$