CONTROL TEMA 1.   NOMBRE:

1. (1,5)Racionaliza:

   a. $\dfrac{6+\sqrt{2}}{\sqrt[3]{4+\sqrt{3}}}$ b. $\dfrac{3}{\sqrt{5}-\sqrt{3}+\sqrt{8}}$

2. (1)Calcula y expresa el resultado en notación científica:

$$\frac{5,13\cdot10^{-3}\cdot(1,067\cdot10^{2}-2,7\cdot10^{-2})^{3}}{7,052\cdot10^{3}+7,13\cdot10^{-1}}=$$

3. (1)Escribe la aproximación a las diezmillonésimas del número 5,09765988. Calcula el error absoluto y el error relativo.

4. (1,5) Calcula y simplifica:

   a. $3\sqrt[3]{16}-\dfrac{1}{2}\sqrt[3]{250}+\dfrac{3}{4}\sqrt[3]{\dfrac{54}{8}}=$

   b. $\sqrt[4]{\dfrac{\sqrt{12\ \sqrt[3]{96}\cdot\left(\sqrt[3]{98}\right)^{2}}}{\sqrt[5]{192}}}$

5. (1) Representa en la recta real $\sqrt{29}$, $-\dfrac{43}{5}$

6. (1)Si log 2=0,3010, log 3= 0,4771, log 5= 0,6990. Calcula:

   a. $\log\sqrt[5]{\dfrac{1}{0,32}}$ b. $\log\dfrac{405}{8}$

7. (1) Escribe el entorno, el intervalo y representa:

   a. $|x-6|\geq3$ b. $|x+5|<9$

8. (1) Escribe la expresión algebraica de:

   $\log A=3+5\log x-\dfrac{1}{7}\log(x-z)+2\log y-4\log\dfrac{z}{y}$

9. (1) Calcula : c. $|x+4|-|3x-6|$

TEMA 1. 1º BACHILLERATO A (2019)

① a) $\dfrac{6+\sqrt{2}}{\sqrt[3]{4+\sqrt{3}}} = \dfrac{(6+\sqrt{2})\left(\sqrt[3]{(4+\sqrt{3})^2}\right)}{\sqrt[3]{(4+\sqrt{3})^3}} = \dfrac{(6+\sqrt{2})\left(\sqrt[3]{(4+\sqrt{3})^2}\right)(4-\sqrt{3})}{(4+\sqrt{3})(4-\sqrt{3})} =$

$= \dfrac{(6+\sqrt{2})\left(\sqrt[3]{(4+\sqrt{3})^2}\right)(4-\sqrt{3})}{16-3} = \dfrac{(6+\sqrt{2})\left(\sqrt[3]{(4+\sqrt{3})^2}\right)(4-\sqrt{3})}{13}$

b) $\dfrac{3}{(\sqrt{5}-\sqrt{3})+\sqrt{8}} = \dfrac{3\left[(\sqrt{5}-\sqrt{3})-\sqrt{8}\right]}{\left[(\sqrt{5}-\sqrt{3})+\sqrt{8}\right]\left[(\sqrt{5}-\sqrt{3})-\sqrt{8}\right]} = \dfrac{3\left[(\sqrt{5}-\sqrt{3})-\sqrt{8}\right]}{5+3-2\sqrt{15}-8} =$

$= \dfrac{3\left[\sqrt{5}-\sqrt{3}-\sqrt{8}\right]}{-2\sqrt{15}} = \dfrac{3\left[\sqrt{5}-\sqrt{3}-\sqrt{8}\right]\sqrt{15}}{-2\sqrt{15}\sqrt{15}} = \dfrac{3\left[\sqrt{5}-\sqrt{3}-\sqrt{8}\right]\sqrt{15}}{-30} =$

$= \dfrac{\left[\sqrt{5}-\sqrt{3}-\sqrt{8}\right]\sqrt{15}}{-10}$

② $\dfrac{5,13\cdot10^{-3}\left(1,067\cdot10^2-2,7\cdot10^{-2}\right)^3}{7,052\cdot10^3+7,13\cdot10^{-1}} = \dfrac{5,13\cdot10^{-3}\left(10670\cdot10^{-2}-2,7\cdot10^{-2}\right)^3}{70520\cdot10^{-1}+7,13\cdot10^{-1}} =$

$= \dfrac{5,13\cdot10^{-3}\left(10667,3\cdot10^{-2}\right)^3}{70527,13\cdot10^{-1}} = \dfrac{5,13\cdot10^{-3}\cdot1,2138\cdot10^{12}\cdot10^{-6}}{70527,13\cdot10^{-1}} = \dfrac{6,22702\cdot10^3}{70527\cdot10^3} =$

$= 8,829254\cdot10^{-5}\cdot10^4 = 8,829\cdot10^{-1}$

③ Aproximación : $5,0976599$

$E_A = |\text{Aprox} - \text{nº real}| = 2\cdot10^{-8}$

$E_R = \dfrac{E_A}{\text{Nº real}} = 3,92\cdot10^{-9}$

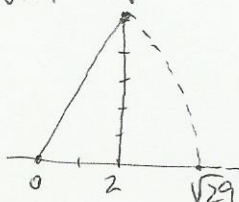④ a) $3\sqrt[3]{16} - \dfrac{1}{2}\sqrt[3]{250} + \dfrac{3}{4}\sqrt[3]{\dfrac{54}{8}} = 3\sqrt[3]{2^4} - \dfrac{1}{2}\sqrt[3]{5^3\cdot2} + \dfrac{3}{4}\sqrt[3]{\dfrac{3^3\cdot2}{2^3}} =$

$= 3\cdot2\sqrt[3]{2} - \dfrac{1}{2}\cdot5\cdot\sqrt[3]{2} + \dfrac{3}{4}\cdot\dfrac{3}{2}\sqrt[3]{2} = \dfrac{37}{8}\sqrt[3]{2}$
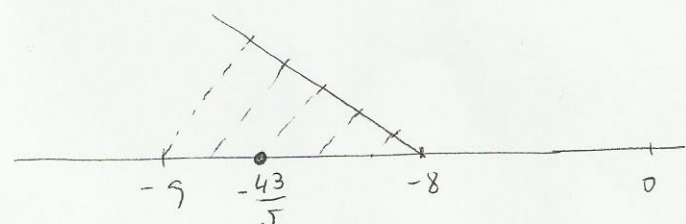
b) $\sqrt[4]{\dfrac{\sqrt{2^2\cdot3}\ \sqrt[3]{2^5\cdot3}\left(\sqrt[3]{7^2\cdot2}\right)^2}{\sqrt[5]{2^6\cdot3}}} = \dfrac{\sqrt[8]{2^2\cdot3}\ \sqrt[24]{2^5\cdot3}\ \sqrt[24]{7^4\cdot2^2}}{\sqrt[20]{2^6\cdot3}} =$

$\sqrt[120]{\dfrac{2^{30}\cdot3^{15}\cdot2^{25}\cdot3^5\cdot7^{20}\cdot2^{10}}{2^{36}\cdot3^6}} = \sqrt[120]{2^{29}\cdot3^{14}\cdot7^{20}}$

⑤ a) $\sqrt{29} = \sqrt{5^2+2^2}$

b) $-\dfrac{43}{5} = -8\dfrac{3}{5}$

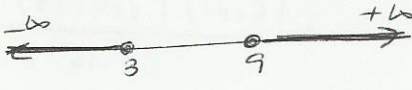**6)** a) $\log \sqrt[5]{\dfrac{1}{0,32}} = \dfrac{1}{5}\left[\log 1 - \log \dfrac{32}{100}\right] = -\dfrac{1}{5}\left[\log 2^5 - \log 100\right] =$

$= -\dfrac{5}{5}\log 2 + \dfrac{2}{5} = -0,3010 + \dfrac{2}{5} = 0,099$

b) $\log \dfrac{405}{8} = \log 405 - \log 8 = \log 3^4 \cdot 5 - \log 2^3 = 4 \cdot \log 3 + \log 5 - 3\log 2 =$

$= 1,7044$

7) a) $|x-6| \geqslant 3 \implies x \in (-\infty, 3] \cup [9, +\infty)$

$\quad \text{b} \quad |x-6| < 3 \to E(6,3) \to (3,9)$

b) $|x+5| < 9 \qquad E(-5,9) \to x \in (-14, 4) \qquad -14 < x < 4$

8) $\log A = \log 1000 + \log x^5 - \log \sqrt[7]{(x-z)} + \log y^2 - \log \left(\dfrac{z}{y}\right)^4$

$\log A = \log \dfrac{1000 \cdot x^5 \cdot y^2}{\sqrt[7]{(x-z)} \cdot \left(\dfrac{z}{y}\right)^4} \implies A = \dfrac{1000 \, x^5 \, y^6}{\sqrt[7]{x-z} \cdot z^4}$