

TEMA 1.**NOMBRE:**

1. (1,5) Racionaliza:

a. $\frac{2-\sqrt{5}}{\sqrt{5}-\sqrt{8}}$

b. $\frac{-2}{\sqrt{5}-\sqrt{7}}$

c. $\frac{\sqrt{3}+7}{\sqrt[3]{3^2}}$

2. (1,5) Calcula y expresa el resultado en notación científica:

$$\frac{4,16 \cdot 10^{-3} \cdot 2,34 \cdot 10^{-2} + 1,072 \cdot 10^3}{(7,265 \cdot 10^2 - 8,51 \cdot 10^{-1})^4} =$$

3. (1,5) Calcula y simplifica:
$$\sqrt[5]{\frac{\sqrt{288 \cdot (\sqrt[6]{648})^2} \cdot \sqrt[5]{245}}{\sqrt[7]{4500}}}$$

5. (1,5) Representa en la recta real $\sqrt{41}$, $-\frac{15}{6}$, $\sqrt{39}$, $\frac{23}{5}$ 6. (1,5) Desarrolla la siguiente expresión: $|2x - 8| - |x + 7| =$ 7. (1) Calcula utilizando fracciones generatrices: $1,28 + 2,4\hat{3} - 7,\hat{3}4 =$

8. (1,5) Representa en la recta real, como desigualdad, como intervalo, o como entorno

a. $E(-3, 5)$ b. $|x - 9| < 6$ c. $|x + 4| \geq 5$

① (1,5)

$$a) \frac{2-\sqrt{5}}{\sqrt{5-\sqrt{8}}} = \frac{(2-\sqrt{5})\sqrt{5-\sqrt{8}}}{(\sqrt{5-\sqrt{8}})^2} = \frac{(2-\sqrt{5})\sqrt{5-\sqrt{8}} \cdot (5+\sqrt{8})}{(5-\sqrt{8})(5+\sqrt{8})} = \frac{(2-\sqrt{5})\sqrt{5-\sqrt{8}}(5+\sqrt{8})}{25-8} = \frac{(2-\sqrt{5})\sqrt{5-\sqrt{8}}(5+\sqrt{8})}{17}$$

$$b) \frac{-2}{\sqrt{5-\sqrt{7}}} = \frac{-2(\sqrt{5}+\sqrt{7})}{(\sqrt{5}-\sqrt{7})(\sqrt{5}+\sqrt{7})} = -\frac{2(\sqrt{5}+\sqrt{7})}{5-7} = \frac{-2(\sqrt{5}+\sqrt{7})}{-2} = \sqrt{5}+\sqrt{7}$$

$$c) \frac{\sqrt{3}+7}{\sqrt[8]{3^2}} = \frac{(\sqrt{3}+7)\sqrt[8]{3^6}}{3}$$

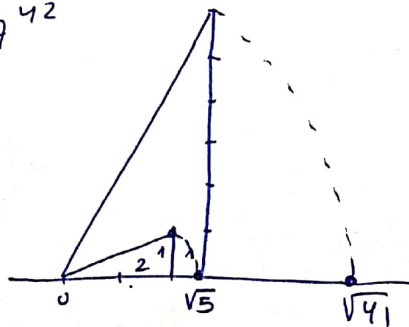
② (1,5)

$$\frac{4,16 \cdot 10^{-3} \cdot 2,34 \cdot 10^{-2} + 1,072 \cdot 10^3}{(7,265 \cdot 10^2 - 8,51 \cdot 10^{-1})^4} = \frac{9,7344 \cdot 10^{-5} + 1,072 \cdot 10^3}{(7265 \cdot 10^{-1} - 8,51 \cdot 10^{-1})^4} = \frac{9,7344 \cdot 10^{-5} + 107200000 \cdot 10^{-5}}{(7256,49 \cdot 10^{-1})^4} = \frac{107200009,7344 \cdot 10^{-5}}{2,7727 \cdot 10^{15} \cdot 10^{-4}} = 38662678,88 \cdot 10^{-16} = 3,867 \cdot 10^{-9}$$

③ (1,5)

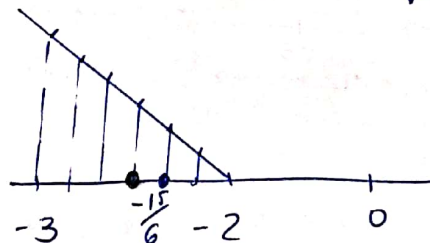
$$\sqrt[5]{\frac{\sqrt{288} \cdot (\sqrt[6]{648})^2 \sqrt[5]{245}}{\sqrt[7]{4500}}} = \frac{10 \sqrt{2^5 \cdot 3^2} \cdot \sqrt[6]{(2^3 \cdot 3^4)^2} \cdot \sqrt[5]{5 \cdot 7^2}}{\sqrt[35]{2^2 \cdot 5^3 \cdot 3^2}} = \frac{2^{100} \sqrt{2^{1050} \cdot 3^{420}} \cdot 2^{210} \cdot 3^{280} \cdot 5^{42} \cdot 7^{84}}{2^{120} \cdot 5^{180} \cdot 3^{120}} = \sqrt[210]{\frac{2^{1140} \cdot 3^{580} \cdot 5^{138} \cdot 7^{84}}{2^{120} \cdot 5^{180} \cdot 3^{120}}}$$

$$= \sqrt[1050]{2^{570} \cdot 3^{290} \cdot 5^{-69} \cdot 7^{42}}$$



⑤ $\sqrt{41} = \sqrt{6^2 + 5^2}$
 (1,5) $\sqrt{5} = \sqrt{2^2 + 1}$

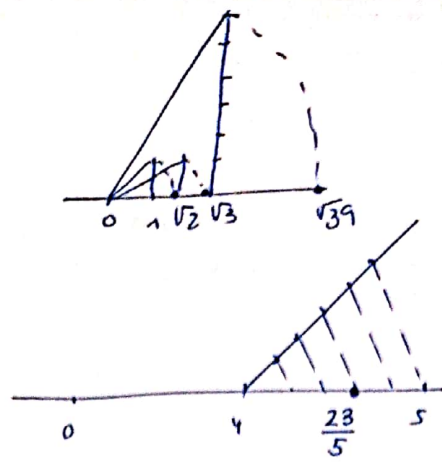
$$-\frac{15}{6} = -2 \frac{3}{6}$$



$$\sqrt{39} = \sqrt{6^2 + \sqrt{3}^2}$$

$$\sqrt{3} = \sqrt{1^2 + \sqrt{2}^2}$$

$$\sqrt{2} = \sqrt{1^2 + 1^2}$$



$$\frac{23}{5} = 4 \frac{3}{5}$$

$$(6) (1,5) \quad |2x-8| - |x+7| = \begin{cases} 2x-8 - |x+7| & \text{si } 2x-8 \geq 0 \rightarrow x \geq 4 \\ -2x+8 - |x+7| & \text{si } 2x-8 < 0 \rightarrow x < 4 \end{cases} =$$

$$= \begin{cases} 2x-8 - (x+7) & \text{si } 2x-8 \geq 0 \rightarrow x \geq 4 \\ & \text{si } x+7 \geq 0 \rightarrow x \geq -7 \\ & \text{si } x \geq 4 \end{cases}$$

$$= \begin{cases} 2x-8 - (-x-7) & \text{si } 2x-8 \geq 0 \rightarrow x \geq 4 \\ & \text{si } x+7 < 0 \rightarrow x < -7 \\ & \text{si } x < -7 \end{cases}$$

$$= \begin{cases} -2x+8 - (x+7) & \text{si } 2x-8 < 0 \rightarrow x < 4 \\ & \text{si } x+7 \geq 0 \rightarrow x \geq -7 \\ & \text{si } -7 \leq x < 4 \end{cases}$$

$$= \begin{cases} -2x+8 - (-x-7) & \text{si } 2x-8 < 0 \rightarrow x < 4 \\ & \text{si } x+7 < 0 \rightarrow x < -7 \\ & \text{si } x < -7 \end{cases}$$

$$= \begin{cases} x-15 & \text{si } x \geq 4 \rightarrow x \in [4, +\infty) \\ 3x-1 & \text{si } x < -7 \\ -3x+1 & \text{si } -7 \leq x < 4 \rightarrow x \in [-7, 4) \\ -x+15 & \text{si } x < -7 \rightarrow x \in (-\infty, -7) \end{cases}$$

$$(7) 1,28 \rightarrow 100x = 128 \rightarrow x = \frac{128}{100}$$

$$(1) 2,4\bar{3} \rightarrow \begin{array}{r} 100x = 243,3\bar{3} \\ -10x = 24,3\bar{3} \\ \hline 90x = 219 \end{array} \rightarrow x = \frac{219}{90}$$

$$7,3\bar{4} \Rightarrow \begin{array}{r} 100x = 734,3\bar{4} \\ -x = 7,3\bar{4} \\ \hline 99x = 727 \end{array} \rightarrow x = \frac{727}{99}$$

$$\frac{128}{100} + \frac{219}{90} - \frac{727}{99} = \frac{-35938}{9900} = -3,6301$$

$$(8) a) E(-3,5) = E_5(-3) \quad -3-5 < x < -3+5 \rightarrow -8 < x < 2 \quad x \in (-8, 2)$$

$$b) |x-9| < 6 \rightarrow -6 < x-9 < 6 \rightarrow 3 < x < 15 \rightarrow x \in (3, 15) \rightarrow E_6(9)$$

$$c) |x+4| \geq 5 \rightarrow x+4 \geq 5 \rightarrow x \geq 1$$

$$x+4 \leq -5 \rightarrow x \leq -9$$

$$x \in (-\infty, -9] \cup [1, +\infty)$$