1. (1,5)Racionaliza:

a. $\frac{5-\sqrt{3}}{\sqrt{3-\sqrt{7}}}$ b. $\frac{-3}{\sqrt{7}+\sqrt{3}}$ c. $\frac{\sqrt{2}+6}{\sqrt[7]{5^2}}$

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

$$\frac{5{,}26 \cdot 10^{-4} \cdot 1{,}45 \cdot 10^{-3} + 1{,}472 \cdot 10^{4}}{(6{,}165 \cdot 10^{3} - 7{,}31 \cdot 10^{-2})^{5}} =$$

3. (1,5) Calcula y simplifica: $\sqrt[4]{\frac{\sqrt{144 \cdot \left(\sqrt[5]{324}\right)^3 \sqrt[4]{490}}}{\sqrt[6]{1500}}}$

4. (1,5) Representa en la recta real $\sqrt{21}, -\frac{13}{4}, \sqrt{38}, \frac{17}{5}$

5. (1,5) Desarrolla la siguiente expresión: $|3x - 15| - |x - 3| =$

6. (1) Calcula utilizando fracciones generatrices: $2,38 + 3,5\hat{3} - 4,\widehat{28} =$

7. (1,5) Representa en la recta real, como desigualdad , como intervalo, o como entorno

a. E(-2, 6) b. $|x + 8| < 5$ c. $|x - 5| \geq 3$

① (1,5) a) $\frac{5-\sqrt{3}}{\sqrt{3-\sqrt{7}}} = \frac{(5-\sqrt{3})\sqrt{3-\sqrt{7}}}{(\sqrt{3-\sqrt{7}})^2} = \frac{(5-\sqrt{3})(\sqrt{3-\sqrt{7}})(3+\sqrt{7})}{(3-\sqrt{7})(3+\sqrt{7})} =$

$= \frac{(5-\sqrt{3})(\sqrt{3-\sqrt{7}})(3+\sqrt{7})}{9-7} = \frac{(5-\sqrt{3})(\sqrt{3-\sqrt{7}})(3+\sqrt{7})}{2}$

b) $\frac{-3}{\sqrt{7}+\sqrt{3}} = \frac{-3(\sqrt{7}-\sqrt{3})}{(\sqrt{7}+\sqrt{3})(\sqrt{7}-\sqrt{3})} = \frac{-3(\sqrt{7}-\sqrt{3})}{7-3} = -\frac{3(\sqrt{7}-\sqrt{3})}{4}$

c) $\frac{\sqrt{2}+6}{\sqrt[7]{5^2}} = \frac{(\sqrt{2}+6)\sqrt[7]{5^5}}{\sqrt[7]{5^7}} = \frac{(\sqrt{2}+6)\sqrt[7]{5^5}}{5}$

② (1,5) $\frac{5,26\cdot 10^{-4}\cdot 1,45\cdot 10^{-3} + 1,472\cdot 10^{4}}{(6,165\cdot \underbrace{10^{3}}_{10^{5}\cdot 10^{-2}} - 7,31\cdot 10^{-2})^5} = \frac{7,627\cdot 10^{-7} + 1,472\cdot \overbrace{10^{4}}^{10^{11}\,/\,10^{-7}}}{(616500\cdot 10^{-2} - 7,31\cdot 10^{-2})^5} =$

$= \frac{7,627\cdot 10^{-7} + 147200000000\cdot 10^{-7}}{(616492,69\cdot 10^{-2})^5} = \frac{147200000007,627\cdot 10^{-7}}{8,9051\cdot 10^{28}\cdot 10^{-10}} =$

$= \frac{1,472000000007627\cdot 10^{4}}{8,9051\cdot 10^{18}} = 0,1653\cdot 10^{-14} = 1,653\cdot 10^{-15}$

③ (1,5) $\sqrt[4]{\frac{\sqrt{144\cdot(\sqrt[5]{324})^3}\sqrt[4]{490}}{\sqrt[6]{1500}}} = \sqrt[4]{\frac{\sqrt{2^4\cdot 3^2}\cdot\sqrt[5]{(2^2\cdot 3^4)^3}\sqrt[4]{2\cdot 5\cdot 7^2}}{\sqrt[6]{2^2\cdot 3\cdot 5^3}}} =$

$= \sqrt[4]{\frac{\sqrt{2^4\cdot 3^2}\cdot\sqrt[5]{2^6\cdot 3^{12}}\sqrt[4]{2\cdot 5\cdot 7^2}}{\sqrt[6]{2^2\cdot 3\cdot 5^3}}} = \frac{\sqrt[8]{2^4\cdot 3^2}\cdot\sqrt[40]{2^6\cdot 3^{12}}\cdot\sqrt[32]{2\cdot 5\cdot 7^2}}{\sqrt[24]{2^2\cdot 3\cdot 5^3}} =$

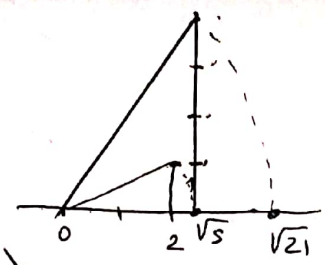
$= \sqrt[480]{\frac{2^{240}\cdot 3^{120}\cdot 2^{72}\cdot 3^{144}\,2^{15}\,5^{15}\,7^{30}}{2^{40}\cdot 3^{20}\cdot 5^{60}}} = \sqrt[480]{\frac{2^{327}\cdot 3^{264}\cdot 5^{15}\cdot 7^{30}}{2^{40}\cdot 3^{20}\cdot 5^{60}}} =$

$= \sqrt[480]{2^{287}\cdot 3^{244}\cdot 5^{-45}\cdot 7^{30}}$

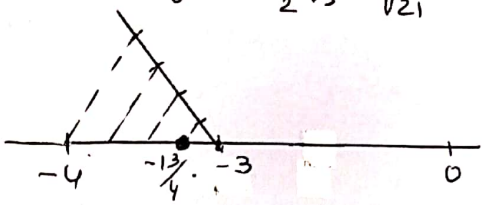
④ (1,5)

a) $\sqrt{21} = \sqrt{4^2+(\sqrt{5})^2}$

$\sqrt{5} = \sqrt{2^2+1^2}$

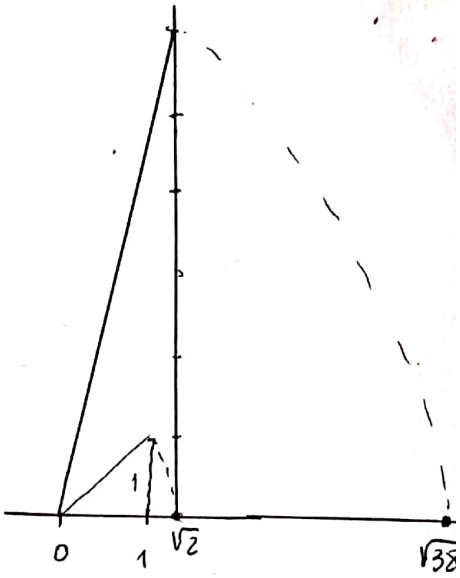


b) $-\frac{13}{4} = -3\frac{1}{4}$

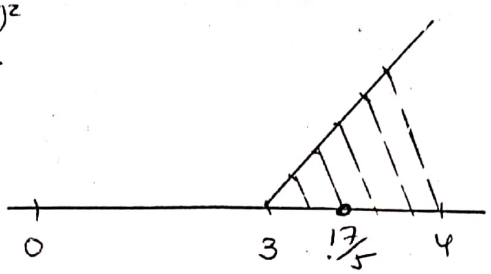


c) $\sqrt{38} = \sqrt{6^2+(\sqrt{2})^2}$

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



d) $\frac{17}{5} = 3\frac{2}{5}$



⑤ (1,5)

$$|3x-15|-|x-3| = \begin{cases} 3x-15-|x-3| & \text{si } 3x-15 \geq 0 \\ -3x+15-|x-3| & \text{si } 3x-15 < 0 \end{cases} =$$

$$= \begin{cases} 3x-15-(x-3) & \text{si } 3x-15 \geq 0 \text{ y } x-3 \geq 0 \\ 3x-15-(-x+3) & \text{si } 3x-15 \geq 0 \text{ y } x-3 < 0 \\ -3x+15-(x-3) & \text{si } 3x-15 < 0 \text{ y } x-3 \geq 0 \\ -3x+15-(-x+3) & \text{si } 3x-15 < 0 \text{ y } x-3 < 0 \end{cases} = \begin{cases} 2x-12 & \text{si } x \geq 5 \\ 4x-18 & \not\exists \\ -4x+18 & 3 \leq x < 5 \\ -2x+12 & \text{si } x < 3 \end{cases}$$

⑥ (1)

$2,38 = N \rightarrow 238 = 100\,N \rightarrow N = \frac{238}{100}$

$3,5\overline{3} = N \rightarrow$

$100\,N = 353,33\ldots$

$-10\,N = 35,33\ldots$

$90\,N = 318 \Rightarrow N = \frac{318}{90}$

$4,\overline{28} = N \rightarrow$

$100\,N = 428,28\ldots$

$-\,N = 4,28\ldots$

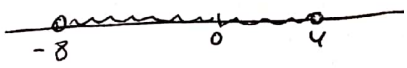
$99\,N = 424 \Rightarrow N = \frac{424}{99}$

$$2,38 + 3,5\overline{3} - 4,\overline{28} = \frac{238}{100} + \frac{318}{90} - \frac{424}{99} = \frac{23562+34980-42400}{9900}$$

$$= \frac{16142}{9900}$$

(7) a) $E(-2,6)$ $\quad x \in [-2-6, -2+6) \Rightarrow x \in (-8,4)$

(1.5) $\quad -8 < x < 4$



b) $|x+8| < 5 \longrightarrow E(-8,5) \longrightarrow x \in (-13,-3)$

$-13 < x < -3$

c) $|x-5| \geq 3$

↳ $|x-5| < 3 \longrightarrow E(5,3) \longrightarrow x \in (2,8)$

Luego

$|x-5| \geq 3 \longrightarrow x \in (-\infty, 2] \cup [8, +\infty)$