

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:

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

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: $2,38 + 3,5\overline{3} - 4,2\overline{8} =$

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

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

TEMA 1 1° BACHILLERATO B

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

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

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

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

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

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

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

$$\textcircled{3} \text{ (1,5) } \sqrt[4]{\frac{\sqrt{144 \cdot (\sqrt[5]{324})^3} \sqrt[4]{490}}{\sqrt[6]{1500}}} = \sqrt[4]{\frac{\sqrt{24 \cdot 3^2 \cdot \sqrt[5]{(2^2 \cdot 3^4)^3}} \sqrt[4]{2 \cdot 5 \cdot 7^2}}{\sqrt[6]{2^2 \cdot 3 \cdot 5^3}}} =$$

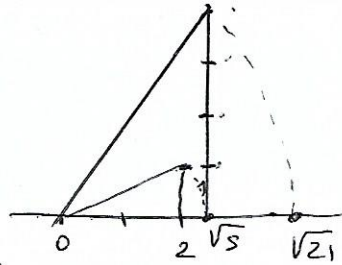
$$= \sqrt[4]{\frac{\sqrt{2^4 \cdot 3^2 \cdot \sqrt[5]{2^6 \cdot 3^{12}}} \sqrt[4]{2 \cdot 5 \cdot 7^2}}{\sqrt[6]{2^2 \cdot 3 \cdot 5^3}}} = \frac{\sqrt[8]{2^4 \cdot 3^2} \cdot \sqrt[40]{2^6 \cdot 3^{12}} \cdot \sqrt[32]{2 \cdot 5 \cdot 7^2}}{\sqrt[24]{2^2 \cdot 3 \cdot 5^3}} =$$

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

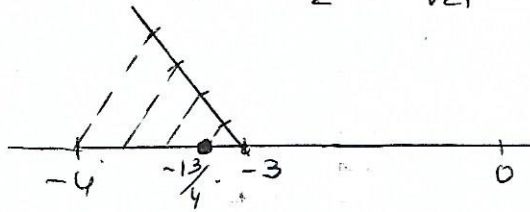
$$= \sqrt[480]{2^{287} \cdot 3^{244} \cdot 5^{-45} \cdot 7^{30}}$$

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

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

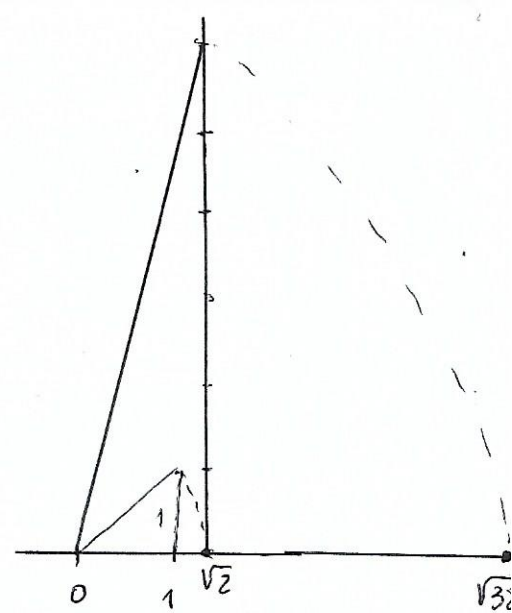


$$b) -\frac{13}{4} = -3\frac{1}{4}$$

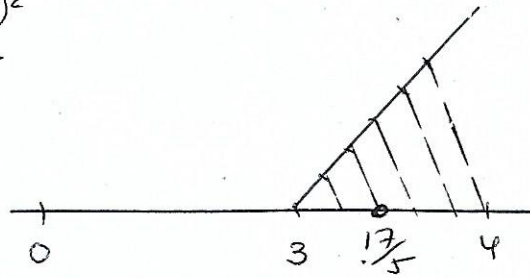


$$c) \sqrt{38} = \sqrt{6^2 + (\sqrt{2})^2}$$

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



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



$$\textcircled{5} \quad (1,5) \quad |3x-15| - |x-3| = \begin{cases} 3x-15 - |x-3| & \text{si } 3x-15 \geq 0 \\ -3x+15 - |x-3| & \text{si } 3x-15 < 0 \end{cases} =$$

$$= \begin{cases} 3x-15 - (x-3) & \text{si } \begin{matrix} 3x-15 \geq 0 \\ x-3 \geq 0 \end{matrix} \\ 3x-15 - (-x+3) & \text{si } \begin{matrix} 3x-15 \geq 0 \\ x-3 < 0 \end{matrix} \\ -3x+15 - (x-3) & \text{si } \begin{matrix} 3x-15 < 0 \\ x-3 \geq 0 \end{matrix} \\ -3x+15 - (-x+3) & \text{si } \begin{matrix} 3x-15 < 0 \\ x-3 < 0 \end{matrix} \end{cases} = \begin{cases} 2x-12 & \text{si } x \geq 5 \\ 4x-18 & \text{si } 3 \leq x < 5 \\ -4x+18 & \text{si } 3 \leq x < 5 \\ -2x+12 & \text{si } x < 3 \end{cases}$$

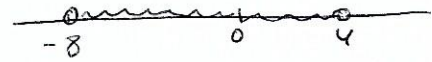
$$\textcircled{6} \quad 2,38 = N \rightarrow 238 = 100N \rightarrow N = \frac{238}{100}$$

$$(1) \quad 3,5\bar{3} = N \rightarrow \begin{array}{r} 100N = 353,33\dots \\ -10N = 35,33\dots \\ \hline 90N = 318 \end{array} \Rightarrow N = \frac{318}{90}$$

$$4,2\bar{8} = N \rightarrow \begin{array}{r} 100N = 428,28\dots \\ -N = 4,28\dots \\ \hline 99N = 424 \end{array} \Rightarrow N = \frac{424}{99}$$

$$2,38 + 3,5\bar{3} - 4,2\bar{8} = \frac{238}{100} + \frac{318}{90} - \frac{424}{99} = \frac{23562 + 34980 - 42400}{9900} = \frac{16142}{9900}$$

⑦ a) $E(-2, 6)$ $x \in [-2-6, -2+6] \Rightarrow x \in (-8, 4)$
(1.5) $-8 < x < 4$



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



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

$\hookrightarrow |x-5| < 3 \rightarrow E(5, 3) \rightarrow x \in (2, 8)$

Luego

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

