TEMA 1.

1. (1,5)Racionaliza: a. $\frac{3-\sqrt{7}}{\sqrt{7-\sqrt{6}}}$ b. $\frac{-4}{\sqrt{10-\sqrt{5}+\sqrt{3}}}$ c. $\frac{\sqrt{6}-5}{\sqrt[7]{5^3}}$

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

$$\frac{4{,}05 \cdot 10^{-4} \cdot (6{,}03 \cdot 10^{3} - 1{,}87 \cdot 10^{-1})^{4}}{8{,}17 \cdot 10^{2} + 1{,}93 \cdot 10^{-3}} =$$

3. (1,5) Calcula y simplifica: $\sqrt[6]{\frac{\sqrt{432 \cdot \left(\sqrt[5]{628}\right)^{3} \quad \sqrt[7]{270}}}{\sqrt[88]{7200}}}$

4. (1,5) Representa en la recta real $\sqrt{57}, -\frac{31}{9}, \sqrt{84}, \frac{45}{7}$

5. (1,5) Desarrolla la siguiente expresión: $|2x-7| - 3|x+10| =$

6. (1) Calcula utilizando fracciones generatrices: $2,87 + 7,2\hat{5} - 9,\widehat{32} =$

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

a. $E_5(-2)$ b. $|x-5| < 6$ c. $d(x,6) < 2$ d. $|x+9| \geq 7$

TEMA 1. 1º BACH B 2020-21

① (1,5)

a) $\frac{3-\sqrt{7}}{\sqrt{7-\sqrt{6}}} = \frac{(3-\sqrt{7})(\sqrt{7-\sqrt{6}})}{(\sqrt{7-\sqrt{6}})^2} = \frac{(3-\sqrt{7})(\sqrt{7-\sqrt{6}})(7+\sqrt{6})}{(7-\sqrt{6})(7+\sqrt{6})} = \frac{(3-\sqrt{7})(\sqrt{7-\sqrt{6}})(7+\sqrt{6})}{49-6} =$

$= \frac{(3-\sqrt{7})(\sqrt{7-\sqrt{6}})(7+\sqrt{6})}{43}$

b) $\frac{-4}{\sqrt{10}-\sqrt{5}+\sqrt{3}} = \frac{-4[(\sqrt{10}-\sqrt{5})-\sqrt{3}]}{[(\sqrt{10}-\sqrt{5})+\sqrt{3}][(\sqrt{10}-\sqrt{5})-\sqrt{3}]} = \frac{-4[(\sqrt{10}-\sqrt{5})-\sqrt{3}]}{10+5-2\sqrt{50}-3} =$

$= \frac{-4[\sqrt{10}-\sqrt{5}-\sqrt{3}](12+2\sqrt{50})}{(12-2\sqrt{50})(12+2\sqrt{50})} = \frac{-4[\sqrt{10}-\sqrt{5}-\sqrt{3}](12+2\sqrt{50})}{144-200} =$

$= \frac{-4[\sqrt{10}-\sqrt{5}-\sqrt{3}](12+2\sqrt{50})}{-56} = \frac{[\sqrt{10}-\sqrt{5}-\sqrt{3}](12+2\sqrt{50})}{14}$

c) $\frac{\sqrt{6}-5}{\sqrt[7]{5^3}} = \frac{(\sqrt{6}-5)\sqrt[7]{5}}{(\sqrt[7]{5^3}\cdot\sqrt[7]{5^4})} = \frac{(\sqrt{6}-5)\sqrt[7]{5^4}}{5}$

② (1,5)

$\frac{4,05\cdot10^{-4}\left[6,03\cdot10^{4}\cdot10^{-1}-1,87\cdot10^{-1}\right]^4}{8,17\cdot10^{5}\cdot10^{-3}+1,93\cdot10^{-3}} = \frac{4,05\cdot10^{-4}\left[60300\cdot10^{-1}-1,87\cdot10^{-1}\right]^4}{817000\cdot10^{-3}+1,93\cdot10^{-3}} =$

$= \frac{4,05\cdot10^{-4}\cdot60298,13^4\cdot10^{-4}}{817001,93\cdot10^{-3}} = \frac{4,05\cdot10^{-4}\cdot1,322\cdot10^{19}\cdot10^{-4}}{817001,93\cdot10^{-3}} =$

$= 6,55\cdot10^{-6}\cdot10^{14} = 6,55\cdot10^{8}$

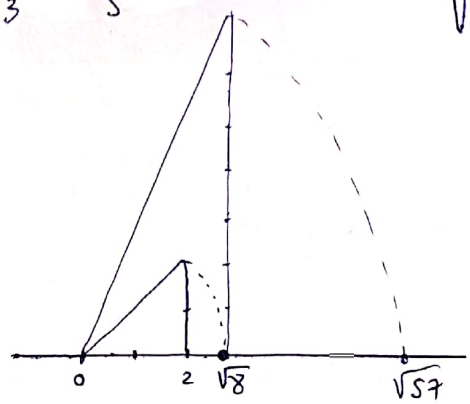
③ (1,5) $\sqrt[6]{\frac{\sqrt{2^4\cdot3^3}\left(\sqrt[5]{2^2\cdot157}\right)^3\sqrt[7]{2\cdot3^3\cdot5}}{\sqrt[8]{2^5\cdot3^2\cdot5^2}}} = \frac{\sqrt[12]{2^4\cdot3^3}\sqrt[60]{2^6\cdot157^3}\sqrt[24]{2\cdot3^3\cdot5}}{\sqrt[48]{2^5\cdot3^2\cdot5^2}} =$

$= \sqrt[3360]{\frac{2^{1120}\cdot3^{840}\cdot2^{336}\cdot157^{168}\cdot2^{40}\cdot3^{120}\cdot5^{40}}{2^{350}\cdot3^{140}\cdot5^{140}}} = \sqrt[3360]{2^{1146}\cdot3^{820}\cdot5^{-100}\cdot157^{168}}$

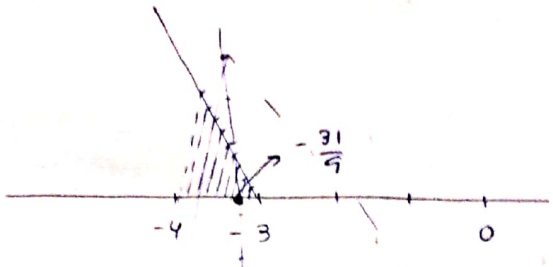
④ (1,5)

$\sqrt{57} = \sqrt{7^2+\sqrt{8}^2}$

$\sqrt{8} = \sqrt{2^2+2^2}$



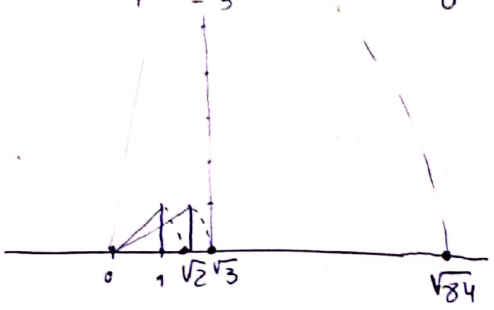
$-\frac{31}{9} = -3\frac{2}{9}$



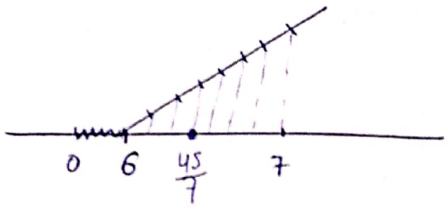
$\sqrt{84} = \sqrt{9^2+\sqrt{3}^2}$

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

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



$\frac{45}{7} = 6\frac{3}{7}$



⑤ (1,5) $|2x-7|-3|x+10| =$

$$\begin{cases} (2x-7)-3(x+10) & 2x-7\geq 0,\ x+10\geq 0 \\ (2x-7)-3(-x-10) & 2x-7\geq 0,\ x+10<0 \\ (-2x+7)-3(x+10) & 2x-7<0,\ x+10\geq 0 \\ (-2x+7)-3(-x-10) & 2x-7<0,\ x+10<0 \end{cases} = \begin{cases} -x-37 & x\geq 7/2,\ x\geq -10 \\ 5x+23 & x\geq 7/2,\ x<-10 \\ -5x-23 & x<7/2,\ x\geq -10 \\ x+37 & x<7/2,\ x<-10 \end{cases}$$

$$= \begin{cases} -x-37 & x\geq 7/2 \\ 5x+23 & \not\exists \\ -5x-23 & -10\leq x<7/2 \\ x+37 & x<-10 \end{cases}$$

⑥ $2,87 + 7,25 - 9,\overline{32} =$

(1) $2,87 = \frac{287}{100}$ $\quad N = 2,87 \rightarrow 100N = 287$ $\quad N = \frac{287}{100}$

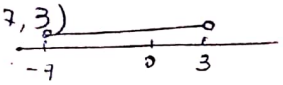
$N = 7,255\ldots$ $\quad 100N = 725,55\ldots$, $-10N = 72,55\ldots$, $90N = 653$ $\quad N = \frac{653}{90}$

$N = 9,3232\ldots$ $\quad 100N = 932,32\ldots$, $-N = 9,32\ldots$, $99N = 923$ $\quad N = \frac{923}{99}$

$\frac{287}{100} + \frac{653}{90} - \frac{923}{99} = \frac{7943}{9900}$

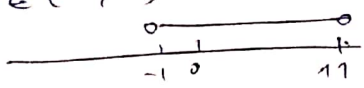
(7) (1,5)

a) $E_5(-2) = -5-2 < x < -2+5 \longrightarrow -7 < x < 3 \longrightarrow x \in (-7, 3)$



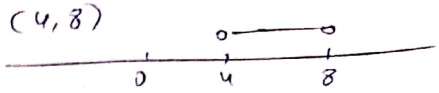
b) $|x-5| < 6 \longrightarrow -6 < x-5 < 6 \longrightarrow -6+5 < x < 6+5$

$-1 < x < 11 \longrightarrow x \in (-1, 11)$



c) $d(x,6) < 2 \rightarrow |x-6| < 2 \rightarrow -2 < x-6 < 2 \longrightarrow 4 < x < 8$

$x \in (4, 8)$



d) $|x+9| \geq 7 \longrightarrow x \in (-\infty, -16] \cup [-2, +\infty)$

$|x+9| < 7 \longrightarrow -7 < x+9 < 7 \longrightarrow -16 < x < -2 \longrightarrow x \in (-16, -2)$