

TEMA 1.

1. (1,5) Racionaliza:

a. $\frac{5-\sqrt{6}}{\sqrt{7}-\sqrt{11}}$

b. $\frac{7}{\sqrt{13}-\sqrt{5}+\sqrt{3}}$

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

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

$$\frac{3,05 \cdot 10^{-3} \cdot (6,27 \cdot 10^4 - 1,67 \cdot 10^{-2})^3}{6,27 \cdot 10^3 + 7,43 \cdot 10^{-2}} =$$

3. (1,5) Calcula y simplifica:

$$\sqrt[5]{\frac{\sqrt{216 \cdot (\sqrt[4]{324})^3} \cdot \sqrt[7]{135}}{\sqrt[6]{3600}}}$$

4. (1,5) Representa en la recta real $\sqrt{53}$, $-\frac{29}{7}$, $\sqrt{62}$, $\frac{43}{6}$

5. (1,5) Desarrolla la siguiente expresión: $|3x - 9| - 2|x + 5| =$

6. (1) Calcula utilizando fracciones generatrices: $2,35 + 6,1\overline{2} - 8,\overline{21} =$

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

a. $E_3(7)$ b. $|x + 5| < 8$ c. $|x - 3| \geq 12$

① (1,5)

$$a) \frac{5-\sqrt{6}}{\sqrt{7-\sqrt{11}}} = \frac{(5-\sqrt{6})\sqrt{7-\sqrt{11}}}{(7-\sqrt{11})} = \frac{(5-\sqrt{6})\sqrt{7-\sqrt{11}}(7+\sqrt{11})}{7^2 - \sqrt{11}^2} = \frac{(5-\sqrt{6})\sqrt{7-\sqrt{11}}(7+\sqrt{11})}{38}$$

$$b) \frac{7}{\sqrt{13-\sqrt{5}+\sqrt{3}}} = \frac{7[\sqrt{13-\sqrt{5}-\sqrt{3}}]}{(\sqrt{13-\sqrt{5}})^2 - \sqrt{3}^2} = \frac{7[\sqrt{13-\sqrt{5}-\sqrt{3}}]}{13+5-2\sqrt{65}-3} = \frac{7[\sqrt{13-\sqrt{5}-\sqrt{3}}](15+2\sqrt{65})}{(15-2\sqrt{65})(15+2\sqrt{65})}$$

$$= \frac{7[\sqrt{13-\sqrt{5}-\sqrt{3}}](15+2\sqrt{65})}{225-4\cdot 65} = \frac{7[\sqrt{13-\sqrt{5}-\sqrt{3}}](15+2\sqrt{65})}{-35}$$

$$c) \frac{\sqrt{6-5}}{\sqrt[9]{7^2}} = \frac{(\sqrt{6-5})\sqrt[9]{7^4}}{\sqrt[9]{7^6}} = \frac{(\sqrt{6-5})\sqrt[9]{7^4}}{7}$$

②

(1,5)

$$\frac{3,05 \cdot 10^{-3} (6,27 \cdot 10^4 - 1,67 \cdot 10^{-2})^3}{6,27 \cdot 10^3 + 7,43 \cdot 10^{-2}} = \frac{3,05 \cdot 10^{-3} (627000 \cdot 10^{-2} - 1,67 \cdot 10^{-2})^3}{627000 \cdot 10^{-2} + 7,43 \cdot 10^{-2}}$$

$$= \frac{3,05 \cdot 10^{-3} (626998,33 \cdot 10^{-2})^3}{627007,43 \cdot 10^{-2}} = \frac{3,05 \cdot 10^{-3} \cdot 2,46491686 \cdot 10^{20} \cdot 10^{-6}}{627007,43 \cdot 10^{-2}}$$

$$= \frac{7,517996423 \cdot 10^{11}}{6,2700743 \cdot 10^3} = 1,199028283 \cdot 10^8$$

③

(1,5)

$$\sqrt[5]{\frac{\sqrt{216 \cdot (\sqrt[4]{324})^3} \sqrt[7]{135}}{\sqrt[6]{3600}}} = \sqrt[5]{\frac{\sqrt{2^3 \cdot 3^3 (\sqrt[4]{2^2 \cdot 3^4})^3} \sqrt[7]{3^3 \cdot 5}}{\sqrt[6]{2^4 \cdot 3^2 \cdot 5^2}}}$$

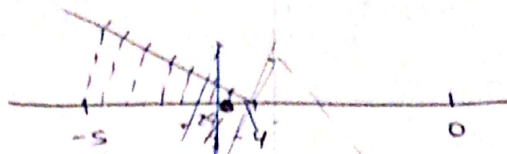
$$= \frac{\sqrt[10]{2^3 \cdot 3^3} \sqrt[40]{2^6 \cdot 3^{12}} \sqrt[70]{3^3 \cdot 5}}{\sqrt[30]{2^4 \cdot 3^2 \cdot 5^2}} = \sqrt[840]{\frac{2^{252} \cdot 3^{252} \cdot 2^{126} \cdot 3^{252} \cdot 3^{36} \cdot 5^{12}}{2^{112} \cdot 3^{56} \cdot 5^{56}}}$$

$$= \sqrt[840]{\frac{2^{378} \cdot 3^{540} \cdot 5^{12}}{2^{112} \cdot 3^{56} \cdot 5^{56}}} = \sqrt[840]{2^{266} \cdot 3^{484} \cdot 5^{-44}} = \sqrt[420]{2^{133} \cdot 3^{242} \cdot 5^{-22}}$$

(4) $\sqrt{53} = \sqrt{7^2 + 2^2}$
 (1.5)

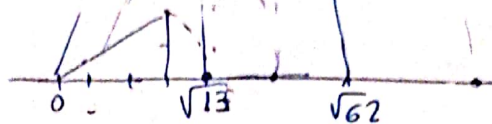


$-\frac{29}{7} = -4\frac{1}{7}$

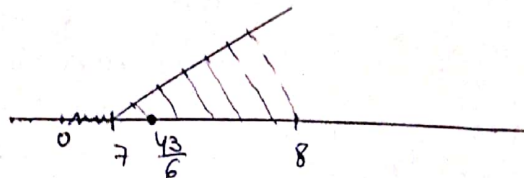


$\sqrt{62} = \sqrt{7^2 + \sqrt{13}^2}$

$\sqrt{13} = \sqrt{3^2 + 2^2}$



$\frac{43}{6} = 7\frac{1}{6}$



(5) $|3x-9| - 2|x+5| =$

}	$(3x-9) - 2(x+5)$	si $3x-9 \geq 0 \rightarrow x \geq 3$	$x+5 \geq 0 \rightarrow x \geq -5 \rightarrow x \geq 3$
	$-(3x-9) - 2(x+5)$	si $3x-9 < 0 \rightarrow x < 3$	$x+5 \geq 0 \rightarrow x \geq -5 \rightarrow -5 \leq x < 3$
	$(3x-9) - 2(-x-5)$	si $3x-9 \geq 0 \rightarrow x \geq 3$	$x+5 < 0 \rightarrow x < -5$ no solution
	$(3x-9) - 2(-x-5)$	si $3x-9 < 0 \rightarrow x < 3$	$x+5 < 0 \rightarrow x < -5 \rightarrow x < -5$

$=$

}	$x - 19$	si $x \geq 3$
	$-5x - 1$	si $-5 \leq x < 3$
	$5x + 1$	no solution
	$-x + 19$	si $x < -5$

6

(1)

$$2,35 + 6,12 - 8,21 = \frac{235}{100} + \frac{551}{90} - \frac{813}{99} = \frac{103}{896}$$

$$N = 2,35$$

$$100N = 235$$

$$N = \frac{235}{100}$$

$$100N = 612,22 \dots$$

$$- 10N = 61,22 \dots$$

$$90N = 551$$

$$N = \frac{551}{90}$$

$$100N = 821,2121 \dots$$

$$- N = 8,2121 \dots$$

$$99N = 813$$

$$N = \frac{813}{99}$$

7

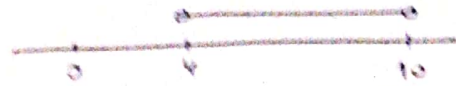
(1,5)

a) $E_3(x) \Rightarrow |x-7| < 3$

$$-3 < x-7 < 3$$

$$4 < x < 10$$

$$x \in (4, 10)$$

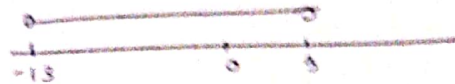


b) $|x+5| < 8$

$$x \in (-13, 3)$$

$$-8 < x+5 < 8 \rightarrow -13 < x < 3$$

$$E_8(-5)$$



c) $|x-3| \geq 12 \rightarrow x \in (-\infty, -9] \cup [15, +\infty)$

$$|x-3| < 12 \rightarrow -12 < x-3 < 12$$

$$-9 < x < 15$$

