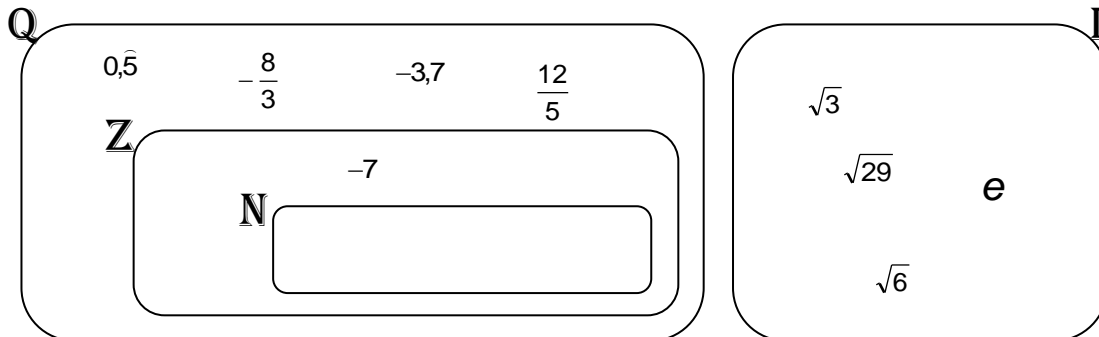


# Boletín IV Repaso Tema I y II– Matemáticas 4º

Clasifica y Representa (cuando sea posible) en la Recta Real los siguientes números:

$$-3,7; -7; \sqrt{29}; -\frac{8}{3}; \sqrt{3}; \frac{12}{5}; e; 0,\bar{5}; \sqrt{6}$$



Calcula

$$34,\bar{75} + 23,8 - 7,0\bar{89} = \frac{3475 - 34}{99} + \frac{238}{10} - \frac{7089 - 70}{990} = \frac{3441}{99} + \frac{238}{10} - \frac{7019}{990} =$$

a. 
$$= \frac{34410}{990} + \frac{23562}{990} - \frac{7019}{990} = \frac{50953}{990}$$

b. 
$$8,0\bar{4} + 5,0\bar{6} = \frac{804 - 80}{90} + \frac{506 - 50}{90} = \frac{724}{90} + \frac{456}{90} = \frac{1180}{90} = \frac{118}{9}$$

c. 
$$13,5\bar{6} - 9,5\bar{2} = \frac{1356 - 135}{90} - \frac{952 - 9}{99} = \frac{1221}{90} - \frac{943}{99} = \frac{13431}{990} - \frac{9430}{990} = \frac{4001}{990}$$

Calcula los siguientes intervalos A, B,  $A \cup B$ ,  $A \cap B$  y represéntalos.

a. 
$$\left. \begin{aligned} A &= \{x \in \mathbb{R} / -2 < x < +3\} \rightarrow (-2,3) \\ B &= \{x \in \mathbb{R} / 0 < x \leq +5\} \rightarrow (0,5] \end{aligned} \right\} \Rightarrow \begin{cases} A \cup B = (-2,5] \\ A \cap B = (0,3) \end{cases}$$

b. 
$$\left. \begin{aligned} A &= \{x \in \mathbb{R} / x > 3\} \rightarrow (3, \infty) \\ B &= \{x \in \mathbb{R} / x < 3\} \rightarrow (-\infty, 3) \end{aligned} \right\} \Rightarrow \begin{cases} A \cup B = \mathbb{R} - \{3\} \\ A \cap B = \emptyset \end{cases}$$

c. 
$$\left. \begin{aligned} A &= \{x \in \mathbb{R} / -2 \leq x < 3\} \rightarrow [-2,3) \\ B &= \{x \in \mathbb{R} / -7 \leq x < -2\} \rightarrow [-7,-2) \end{aligned} \right\} \Rightarrow \begin{cases} A \cup B = [-7,3) \\ A \cap B = \emptyset \end{cases}$$

d. 
$$\left. \begin{aligned} A &= \{x \in \mathbb{R} / -1 \geq x\} \rightarrow (-\infty, -1] \\ B &= \{x \in \mathbb{R} / -1 < x \leq 5\} \rightarrow (-1, 5] \end{aligned} \right\} \Rightarrow \begin{cases} A \cup B = (-\infty, 5] \\ A \cap B = \emptyset \end{cases}$$

Calcula los siguientes intervalos A, B,  $A \cup B$ ,  $A \cap B$  y represéntalos.

a. 
$$\left. \begin{aligned} A &= \{x \in \mathbb{R} / x \geq 3\} \rightarrow [3, \infty) \\ B &= E(1,2) \rightarrow (-1,3) \end{aligned} \right\} \Rightarrow \begin{cases} A \cup B = (-1, \infty) \\ A \cap B = \emptyset \end{cases}$$

b. 
$$\left. \begin{aligned} A &= E[-1,4] \rightarrow [-5,3] \\ B &= E(6,3) \rightarrow (3,9) \end{aligned} \right\} \Rightarrow \begin{cases} A \cup B = [-5,9) \\ A \cap B = \emptyset \end{cases}$$

Nota.- Faltan las representaciones de los números reales en la recta y los intervalos.



Factoriza las raíces y extrae aquellos factores que sea posible realizando las operaciones posibles con radicales. **(Solución).**

a.  $3\sqrt{36} - 7\sqrt{49} = 3 \cdot 6 - 7 \cdot 7 = 18 - 49 = -31$

b.  $3\sqrt{243} + 6\sqrt{204} - 2\sqrt{147} = 3\sqrt{3^5} + 6\sqrt{2^2 \cdot 3 \cdot 17} - 2\sqrt{7^2 \cdot 3} =$   
 $= 3\sqrt{3^4} \cdot \sqrt{3} + 6\sqrt{2^2} \cdot \sqrt{3} \cdot \sqrt{17} - 2\sqrt{7^2} \cdot \sqrt{3} = 3 \cdot 3^2 \cdot \sqrt{3} + 6 \cdot 2 \cdot \sqrt{3} \cdot \sqrt{17} - 2 \cdot 7 \cdot \sqrt{3} =$   
 $= 27\sqrt{3} + 18\sqrt{3} \cdot \sqrt{17} - 14\sqrt{3} = 13\sqrt{3} + 18\sqrt{3} \cdot \sqrt{17}$

c.  $5\sqrt{27} + 7\sqrt{8} - 5\sqrt{12} = 5\sqrt{3^3} + 7\sqrt{2^3} - 5\sqrt{2^2 \cdot 3} = 5\sqrt{3^2 \cdot 3} + 7\sqrt{2^2 \cdot 2} - 5\sqrt{2^2 \cdot 3} =$   
 $= 5\sqrt{3^2} \cdot \sqrt{3} + 7\sqrt{2^2} \cdot \sqrt{2} - 5\sqrt{2^2} \cdot \sqrt{3} = 5 \cdot 3 \cdot \sqrt{3} + 7 \cdot 2 \cdot \sqrt{2} - 5 \cdot 2 \cdot \sqrt{3} =$   
 $= 15\sqrt{3} + 14\sqrt{2} - 10\sqrt{3} = 5\sqrt{3} + 14\sqrt{2}$

d.  $9\sqrt{3^2 + 4^2} + 4\sqrt{3} - \sqrt{25} = 9\sqrt{9+16} + 4\sqrt{3} - \sqrt{25} = 9\sqrt{25} + 4\sqrt{3} - \sqrt{25} =$   
 $= 9 \cdot 5 + 4\sqrt{3} - 5 = 45 + 4\sqrt{3} - 5 = 40 + 4\sqrt{3}$

e.  $6\sqrt{75} - 7\sqrt{48} + 9\sqrt{3} - \sqrt{300} = 6\sqrt{5^2 \cdot 3} - 7\sqrt{2^4 \cdot 3} + 9\sqrt{3} - \sqrt{2^2 \cdot 5^2 \cdot 3} =$   
 $= 6\sqrt{5^2} \cdot \sqrt{3} - 7\sqrt{2^4} \cdot \sqrt{3} + 9\sqrt{3} - \sqrt{2^2} \cdot \sqrt{5^2} \cdot \sqrt{3} = 6 \cdot 5 \cdot \sqrt{3} - 7 \cdot 2^2 \cdot \sqrt{3} + 9\sqrt{3} - 2 \cdot 5 \cdot \sqrt{3} =$   
 $= 30\sqrt{3} - 28\sqrt{3} + 9\sqrt{3} - 10\sqrt{3} = \sqrt{3}$

f.  $6\sqrt{32} + 4\sqrt{75} - \sqrt{98} = 6\sqrt{2^5} + 4\sqrt{5^2 \cdot 3} - \sqrt{7^2 \cdot 2} = 6\sqrt{2^4} \cdot \sqrt{2} + 4\sqrt{5^2} \cdot \sqrt{3} - \sqrt{7^2} \cdot \sqrt{2} =$   
 $= 6 \cdot 2^2 \cdot \sqrt{2} + 4 \cdot 5 \cdot \sqrt{3} - 7 \cdot \sqrt{2} = 24\sqrt{2} + 20\sqrt{3} - 7\sqrt{2} = 17\sqrt{2} + 20\sqrt{3}$

g.  $\sqrt[3]{432} - 2 \cdot \sqrt[3]{1024} + 3 \cdot \sqrt[3]{250} = \sqrt[3]{2^4 \cdot 3^3} - 2 \cdot \sqrt[3]{2^{10}} + 3 \cdot \sqrt[3]{5^3 \cdot 2} =$   
 $= \sqrt[3]{2^3} \cdot \sqrt[3]{2} \cdot \sqrt[3]{3^3} - 2 \cdot \sqrt[3]{2^9} \cdot \sqrt[3]{2} + 3 \cdot \sqrt[3]{5^3} \cdot \sqrt[3]{2} = 2 \cdot 3 \cdot \sqrt[3]{2} - 2 \cdot 2^3 \cdot \sqrt[3]{2} + 3 \cdot 5 \cdot \sqrt[3]{2} =$   
 $= 6 \cdot \sqrt[3]{2} - 16 \cdot \sqrt[3]{2} + 15 \cdot \sqrt[3]{2} = 5 \cdot \sqrt[3]{2}$

h.  $\sqrt[5]{96} + 5 \cdot \sqrt[5]{729} - 3 \cdot \sqrt[5]{6250} = \sqrt[5]{2^5 \cdot 3} + 5 \cdot \sqrt[5]{3^6} - 3 \cdot \sqrt[5]{5^5 \cdot 2} =$   
 $= \sqrt[5]{2^5} \cdot \sqrt[5]{3} + 5 \cdot \sqrt[5]{3} \cdot \sqrt[5]{3^5} - 3 \cdot \sqrt[5]{5^5} \cdot \sqrt[5]{2} = 2 \cdot \sqrt[5]{3} + 5 \cdot \sqrt[5]{3} \cdot 3 - 3 \cdot 5 \cdot \sqrt[5]{2} =$   
 $= 2 \cdot \sqrt[5]{3} + 15 \cdot \sqrt[5]{3^5} - 15 \cdot \sqrt[5]{2} = 2 \cdot \sqrt[5]{3}$

i.  $3 \cdot \sqrt[4]{48} + \sqrt[3]{81} - 2 \cdot \sqrt[3]{3} = 3 \cdot \sqrt[4]{2^4 \cdot 3} + \sqrt[3]{3^4} - 2 \cdot \sqrt[3]{3} = 3 \cdot \sqrt[4]{2^4} \cdot \sqrt[4]{3} + \sqrt[3]{3^3} \cdot \sqrt[3]{3} - 2 \cdot \sqrt[3]{3} =$   
 $= 3 \cdot 2 \cdot \sqrt[4]{3} + 3 \cdot \sqrt[3]{3} - 2 \cdot \sqrt[3]{3} = 6 \cdot \sqrt[4]{3} + \sqrt[3]{3}$

Racionaliza.(Solución)

$$a. \frac{2}{\sqrt[3]{2^8}} = \frac{2}{\sqrt[3]{2^8}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} = \frac{2 \cdot \sqrt[3]{2}}{\sqrt[3]{2^{8+1}}} = \frac{2 \cdot \sqrt[3]{2}}{\sqrt[3]{2^9}} = \frac{2 \cdot \sqrt[3]{2}}{2^3} = \frac{\sqrt[3]{2}}{4}$$

$$b. \frac{7}{\sqrt[3]{3}} = \frac{7}{\sqrt[3]{3}} \cdot \frac{\sqrt[3]{3^2}}{\sqrt[3]{3^2}} = \frac{7 \cdot \sqrt[3]{3^2}}{\sqrt[3]{3^{1+2}}} = \frac{7 \cdot \sqrt[3]{3^2}}{\sqrt[3]{3^3}} = \frac{7 \cdot \sqrt[3]{3^2}}{3}$$

$$c. \frac{1}{\sqrt[5]{5^{11}}} = \frac{1}{\sqrt[5]{5^{11}}} \cdot \frac{\sqrt[5]{5^4}}{\sqrt[5]{5^4}} = \frac{\sqrt[5]{5^4}}{\sqrt[5]{5^{11+4}}} = \frac{\sqrt[5]{5^4}}{\sqrt[5]{5^{15}}} = \frac{\sqrt[5]{5^4}}{5^3} = \frac{\sqrt[5]{5^4}}{125}$$

$$d. \frac{-5}{\sqrt[3]{6^5}} = \frac{-5}{\sqrt[3]{6^5}} \cdot \frac{\sqrt[3]{6}}{\sqrt[3]{6}} = \frac{-5 \cdot \sqrt[3]{6}}{\sqrt[3]{6^{5+1}}} = \frac{-5 \cdot \sqrt[3]{6}}{\sqrt[3]{6^6}} = \frac{-5 \cdot \sqrt[3]{6}}{6^2} = \frac{-5 \cdot \sqrt[3]{6}}{36}$$

$$e. \frac{-2}{\sqrt[5]{5}} = \frac{-2}{\sqrt[5]{5}} \cdot \frac{\sqrt[5]{5^4}}{\sqrt[5]{5^4}} = \frac{-2 \cdot \sqrt[5]{5^4}}{\sqrt[5]{5^{1+4}}} = \frac{-2 \cdot \sqrt[5]{5^4}}{\sqrt[5]{5^5}} = \frac{-2 \cdot \sqrt[5]{5^4}}{5}$$

Racionaliza.(Solución)

$$a. \frac{\sqrt{5}}{-\sqrt{5} + \sqrt{3}} = \frac{\sqrt{5}}{-\sqrt{5} + \sqrt{3}} \cdot \frac{-\sqrt{5} - \sqrt{3}}{-\sqrt{5} - \sqrt{3}} = \frac{-\sqrt{25} - \sqrt{15}}{(-\sqrt{5})^2 - (\sqrt{3})^2} = \frac{-\sqrt{25} - \sqrt{15}}{5 - 3} = \frac{-\sqrt{25} - \sqrt{15}}{2}$$

$$b. \frac{-2}{\sqrt{2} + \sqrt{5}} = \frac{-2}{\sqrt{2} + \sqrt{5}} \cdot \frac{\sqrt{2} - \sqrt{5}}{\sqrt{2} - \sqrt{5}} = \frac{-2\sqrt{2} + 2\sqrt{5}}{(\sqrt{2})^2 - (\sqrt{5})^2} = \frac{-2\sqrt{2} + 2\sqrt{5}}{2 - 5} = \frac{-2\sqrt{2} + 2\sqrt{5}}{-3} = \frac{2\sqrt{2} - 2\sqrt{5}}{3}$$

$$c. \frac{5}{-\sqrt{3} + \sqrt{2}} = \frac{5}{-\sqrt{3} + \sqrt{2}} \cdot \frac{-\sqrt{3} - \sqrt{2}}{-\sqrt{3} - \sqrt{2}} = \frac{-5\sqrt{3} + 5\sqrt{2}}{(-\sqrt{3})^2 + (\sqrt{2})^2} = \frac{-5\sqrt{3} + 5\sqrt{2}}{3 - 2} = -5\sqrt{3} + 5\sqrt{2}$$

$$d. \frac{-1}{-\sqrt{3} - 5} = \frac{-1}{-\sqrt{3} - 5} \cdot \frac{-\sqrt{3} + 5}{-\sqrt{3} + 5} = \frac{\sqrt{3} - 5}{(-\sqrt{3})^2 - 5^2} = \frac{\sqrt{3} - 5}{3 - 25} = \frac{\sqrt{3} - 5}{-22} = -\frac{\sqrt{3} - 5}{22}$$

$$e. \frac{3}{\sqrt{3} + 2} = \frac{3}{\sqrt{3} + 2} \cdot \frac{\sqrt{3} - 2}{\sqrt{3} - 2} = \frac{3\sqrt{3} - 6}{(\sqrt{3})^2 - 2^2} = \frac{3\sqrt{3} - 6}{3 - 4} = \frac{3\sqrt{3} - 6}{-1} = -3\sqrt{3} + 6$$

$$f. \frac{-\sqrt{3} - 2}{\sqrt{7} - 4} = \frac{-\sqrt{3} - 2}{\sqrt{7} - 4} \cdot \frac{\sqrt{7} + 4}{\sqrt{7} + 4} = \frac{-\sqrt{21} - 4\sqrt{3} - 2\sqrt{7} - 8}{(\sqrt{7})^2 - 4^2} = \frac{-\sqrt{21} - 4\sqrt{3} - 2\sqrt{7} - 8}{7 - 16} =$$

$$= \frac{-\sqrt{21} - 4\sqrt{3} - 2\sqrt{7} - 8}{-9} = \frac{\sqrt{21} + 4\sqrt{3} + 2\sqrt{7} + 8}{9}$$