

ALGEBRA

2th

Retroalimentación

Sesión 1



 **SACO OLIVEROS**



PROBLEMA 1:

Factorice e indique la suma de los términos independientes

$$Q(x) = x^2 - 4x - 12$$

Resolución:

$$Q(x) = x^2 - 4x - 12$$

$$\begin{array}{rcl} x & \searrow & -6 = -6x \\ x & \nearrow & 2 = 2x \\ & & \hline & & -12 \end{array}$$

$$Q(x) = (x - 6)(x + 2)$$

Piden : $-6 + 2 = -4$

$$\therefore \Sigma T.I = -4$$



PROBLEMA 2:

Transforme a producto

$$M(x; y) = 9x^2 - 9xy + 2y^2$$

e indique un factor primo

Resolución:

$$\begin{array}{rcl}
 M(x; y) = 9x^2 - 9xy + 2y^2 & & \\
 \begin{array}{l} 3x \\ 3x \end{array} \begin{array}{l} \nearrow \\ \searrow \end{array} \begin{array}{l} -2y \\ -y \end{array} & = & \begin{array}{l} -6xy \\ -3xy \end{array} + \\
 & & \hline
 & & -9xy
 \end{array}$$

$$M(x; y) = (3x - 2y)(3x - y)$$

Factores Primos: $(3x - 2y)$; $(3x - y)$



PROBLEMA 3:

Calcule la suma de factores primos de

$$R(x; y) = 3x^2 + 7xy + 2y^2 + 6x - 3y - 9$$

Resolución:

$$R(x; y) = 3x^2 + 7xy + 2y^2 + 6x - 3y - 9$$

$$\begin{array}{r} 6xy \\ xy \\ \hline 7xy \end{array} \quad \begin{array}{r} 3y \\ -6y \\ \hline -3y \end{array} \quad \begin{array}{r} 9x \\ -3x \\ \hline 6x \end{array}$$

$$R(x; y) = (3x + y - 3)(x + 2y + 3)$$

Piden :

$$\underline{3x} + \underline{y} - \cancel{3} + \underline{x} + \underline{2y} + \cancel{3} = 4x + 3y$$

$$\therefore \Sigma f.p = 4x + 3y$$



PROBLEMA 4:

Calcule $F = \sqrt{11 - 2\sqrt{28}} + \sqrt{16 - 2\sqrt{63}}$

Resolución

$$F = \sqrt{11 - 2\sqrt{28}} + \sqrt{16 - 2\sqrt{63}}$$

Diagram showing the decomposition of the terms under the square roots:

- $11 = 7 + 4$ (indicated by yellow arrows from 11 to 7 and 4)
- $2\sqrt{28} = 2\sqrt{7 \times 4}$ (indicated by yellow arrows from 28 to 7 and 4)
- $16 = 9 + 7$ (indicated by yellow arrows from 16 to 9 and 7)
- $2\sqrt{63} = 2\sqrt{9 \times 7}$ (indicated by yellow arrows from 63 to 9 and 7)

$$F = \cancel{\sqrt{7}} - \sqrt{4} + \sqrt{9} - \cancel{\sqrt{7}}$$

$$F = -2 + 3$$

$$F = 1$$

RECUERDA

FORMA PRÁCTICA

$$\sqrt{A \pm \sqrt{B}} = \sqrt{(x + y) \pm 2\sqrt{xy}}$$

$$\therefore F = 1$$



PROBLEMA 5:

Durante una clase, el maestro propuso a los escolares que sumaran los números del 1 al 100. El pequeño Gauss sorprendió a todos al encontrar la solución casi inmediata. La edad de este genio en la que propuso la solución, lo hallarás al resolver

$$A = \frac{\sqrt{80} - \sqrt{45} + \sqrt{500} - \sqrt{20}}{\sqrt{5}}$$

¿Cuál fue la edad?

Resolución

$$A = \sqrt{\frac{80}{5}} - \sqrt{\frac{45}{5}} + \sqrt{\frac{500}{5}} - \sqrt{\frac{20}{5}}$$

$$A = \sqrt{16} - \sqrt{9} + \sqrt{100} - \sqrt{4}$$

$$A = 4 - 3 + 10 - 2$$

\therefore Gauss tenía 9 añitos

**PROBLEMA 6:**

Indique el resultado de $Q = \sqrt{13 + \sqrt{168}} - \sqrt{6}$

Resolución

$$Q = \sqrt{13 + \sqrt{4 \times 42}} - \sqrt{6}$$

$$Q = \sqrt{13 + 2\sqrt{42}} - \sqrt{6}$$

$\swarrow \quad \searrow \quad \swarrow \quad \searrow$
 $7 + 6 \quad 7 \times 6$

$$Q = \sqrt{7} + \cancel{\sqrt{6}} - \cancel{\sqrt{6}}$$

$$Q = \sqrt{7}$$

$$\therefore Q = \sqrt{7}$$

**PROBLEMA 7:**

Efectúe

$$R = \frac{12}{\sqrt{3}} - \frac{20}{\sqrt{5}} + \sqrt{80}$$

Resolución

$$R = \frac{12}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} - \frac{20}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} + \sqrt{16 \times 5}$$

$$R = \frac{12\sqrt{3}}{3} - \frac{20\sqrt{5}}{5} + 4\sqrt{5}$$

$$R = 4\sqrt{3} - \cancel{4\sqrt{5}} + \cancel{4\sqrt{5}}$$

$$\therefore R = 4\sqrt{3}$$

PROBLEMA 8:

Racionalice

$$E = \frac{15}{\sqrt[6]{3^2}} - \frac{32}{\sqrt[3]{4}}$$

Resolución

$$E = \frac{15}{\sqrt[6]{3^2}} \times \frac{\sqrt[6]{3^4}}{\sqrt[6]{3^4}} - \frac{32}{\sqrt[3]{2^2}} \times \frac{\sqrt[3]{2^1}}{\sqrt[3]{2^1}}$$

$$E = \frac{15 \sqrt[6]{3^4}}{3} - \frac{32 \sqrt[3]{2}}{2}$$

$$E = 5 \sqrt[6]{81} - 16 \sqrt[3]{2}$$

$$\therefore E = 5 \sqrt[6]{81} - 16 \sqrt[3]{2}$$

**PROBLEMA 9:**

Cambie a fracción racional lo siguiente

$$S = \frac{10}{\sqrt{7} + \sqrt{2}}$$

Resolución

$$S = \frac{10}{(\sqrt{7} + \sqrt{2})} \times \frac{(\sqrt{7} - \sqrt{2})}{(\sqrt{7} - \sqrt{2})}$$

$$S = \frac{10(\sqrt{7} - \sqrt{2})}{7 - 2}$$

$$S = \frac{\cancel{10}^2(\sqrt{7} - \sqrt{2})}{\cancel{5}_5}$$

$$\therefore S = 2(\sqrt{7} - \sqrt{2})$$

**PROBLEMA 10**

Calcule el valor de A racionalizando

$$A = \frac{13}{4 + \sqrt{3}} + \frac{13}{4 - \sqrt{3}}$$

Resolución

$$A = \frac{13}{\sqrt{16} + \sqrt{3}} \times \frac{(\sqrt{16} - \sqrt{3})}{(\sqrt{16} - \sqrt{3})} + \frac{13}{\sqrt{16} - \sqrt{3}} \times \frac{(\sqrt{16} + \sqrt{3})}{(\sqrt{16} + \sqrt{3})}$$

$$A = 4 - \cancel{\sqrt{3}} + 4 + \cancel{\sqrt{3}}$$

$$A = 8$$

$$A = \frac{13(4 - \sqrt{3})}{16 - 3} + \frac{13(4 + \sqrt{3})}{16 - 3}$$

$$A = \frac{\cancel{13}(4 - \sqrt{3})}{\cancel{13}} + \frac{\cancel{13}(4 + \sqrt{3})}{\cancel{13}}$$

$$\therefore A = 8$$