

ALGEBRA

Chapter
19,20,21

2th
Session I

RETROALIMENTACIÓN
TOMO 7




 **SACO OLIVEROS**

PROBLEMA 1:

Resuelve

$$15 - (2x - 1) = 8 - (2 - 3x)$$

Resolución:


$$15 - (2x - 1) = 8 - (2 - 3x)$$

$$15 - 2x + 1 = 8 - 2 + 3x$$

$$16 - 2x = 6 + 3x$$

$$10 = 5x$$

$$x = 2$$

$$C.S = \{2\}$$

PROBLEMA 2:

Calcule el valor de x en la ecuación

$$\frac{x}{2} + \frac{x+1}{7} = x - 2$$

Resolución:

$$14 \left(\frac{x}{2} \right) + 14 \left(\frac{x+1}{7} \right) = 14(x-2)$$

$$mcm(2; 7) = 14$$

$$7x + 2(x+1) = 14x - 28$$

$$7x + 2x + 2 = 14x - 28$$

$$9x + 2 = 14x - 28$$

$$30 = 5x$$

$$x = 6$$

$$x = 6$$

PROBLEMA 3:

Determine "x" en

$$a^2x - a = b^2x - b$$

Resolución:

$$a^2x - a = b^2x - b$$

$$a^2x - b^2x = -b + a$$

$$x(a^2 - b^2) = a - b$$

$$x(a + b)(a - b) = a - b$$

$$x = \frac{1}{a + b}$$

RECUERDA

DIFERENCIA DE CUADRADOS

$$a^2 - b^2 = (a + b)(a - b)$$

$$\therefore x = \frac{1}{a + b}$$

PROBLEMA 4:

Calcule las raíces de la ecuación

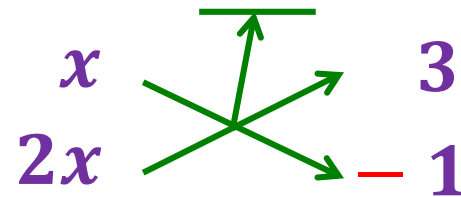
$$3x^2 + 2x + 1 = x^2 - 3x + 4$$

Resolución

$$3x^2 + 2x + 1 = x^2 - 3x + 4$$

$$3x^2 + 2x + 1 - x^2 + 3x - 4 = 0$$

$$2x^2 + 5x - 3 = 0$$



$$\begin{array}{ccc} & \xrightarrow{\quad} & \\ x & & 3 \\ 2x & \searrow \quad \nearrow & -1 \end{array}$$

$$\Rightarrow x = -3 \quad x = \frac{1}{2}$$

$$(x + 3)(2x - 1) = 0$$

$$x + 3 = 0 \quad \vee \quad 2x - 1 = 0$$

$$\therefore x_1 = -3 \quad \vee \quad x_2 = \frac{1}{2}$$

PROBLEMA 5:

Calcule la mayor raíz de

$$2x^2 - 3x = (x + 3)^2 - 13$$

Resolución

$$2x^2 - 3x = (x + 3)^2 - 13$$

$$2x^2 - 3x = x^2 + 6x + 9 - 13$$

$$x^2 - 9x + 4 = 0$$

$$a = 1 ; b = -9 ; c = 4$$

$$\Delta = b^2 - 4ac$$

$$\Delta = (-9)^2 - 4(1)(4)$$

$$\Delta = 81 - 16$$

$$\Delta = 65$$

Fórmula general:

$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$x = \frac{-(-9) \pm \sqrt{65}}{2(1)} = \frac{9 \pm \sqrt{65}}{2}$$

$$x_1 = \frac{9 - \sqrt{65}}{2}$$

$$x_2 = \frac{9 + \sqrt{65}}{2}$$

$$\therefore x_2 = \frac{9 + \sqrt{65}}{2}$$

PROBLEMA 6:

Resuelva

$$25x^2 = 1$$

Resolución

$$25x^2 = 1$$

$$25x^2 - 1 = 0$$

$$(5x + 1)(5x - 1) = 0$$

$$5x + 1 = 0 \quad \vee \quad 5x - 1 = 0$$

$$x = -\frac{1}{5}$$

$$x = \frac{1}{5}$$

RECUERDA

DIFERENCIA DE CUADRADOS

$$a^2 - b^2 = (a + b)(a - b)$$

$$\therefore C.S = \left\{ -\frac{1}{5}; \frac{1}{5} \right\}$$

PROBLEMA 7:

Si $x \in [11; 21)$, indique el intervalo de $\frac{x-1}{5}$, sabiendo que su mínimo valor entero representa la séptima parte de la edad de Diego. ¿Cuál es esa edad?

Resolución

$$\begin{array}{l} -1 \\ \div 5 \end{array} \begin{array}{l} \curvearrowright \\ \curvearrowright \end{array} \begin{array}{l} 11 \leq x < 21 \\ 10 \leq x - 1 < 20 \\ 2 \leq \frac{x - 1}{5} < 4 \end{array}$$

Mínimo valor entero = 2

\therefore Diego tiene 14 años.

PROBLEMA 8

Sabiendo que $x \in [3; 7)$, halle el intervalo que pertenece $\frac{5x-1}{2}$

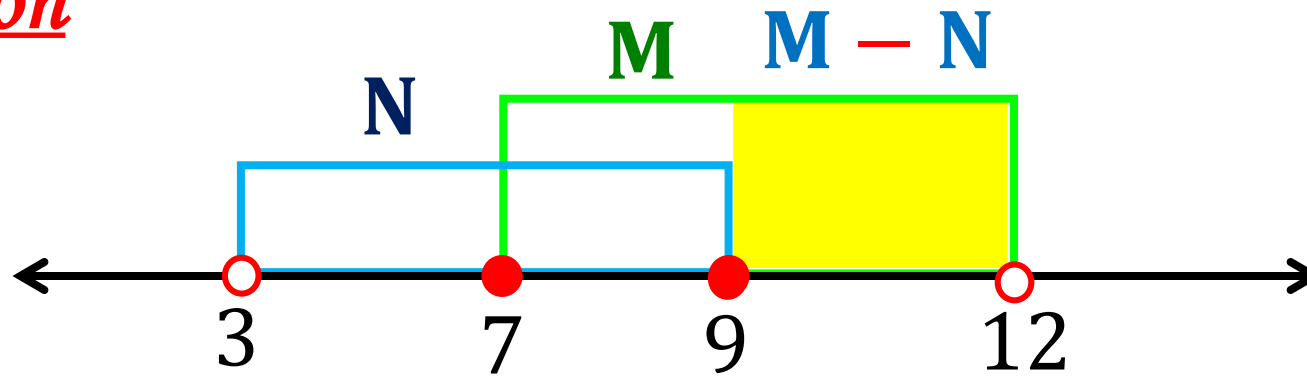
Resolución

$$\begin{array}{l} \times 5 \\ \rightarrow 3 \leq x < 7 \\ \rightarrow 15 \leq 5x < 35 \\ -1 \\ \rightarrow 14 \leq 5x - 1 < 34 \\ \div 2 \\ \rightarrow 7 \leq \frac{5x - 1}{2} < 17 \end{array}$$

$$\therefore \frac{5x - 1}{2} \in [7; 17)$$

PROBLEMA 9

Si $N = \langle 3; 9 \rangle$ y $M = [7; 12]$, halle el intervalo $M - N$ e indique la suma de elementos enteros

Resolución

$$M - N = [9; 12)$$

$$\sum \text{elementos enteros} = 9 + 10 + 11 = 30$$

$$\therefore \sum = 30$$

PROBLEMA 10

Si $x \in [-1; 5)$, halle el intervalo al cual pertenece $-2x + 7$

Resolución

$$\begin{array}{l} \times (-2) \\ \qquad \qquad \qquad -1 \leq x < 5 \\ \qquad \qquad \qquad \swarrow \quad \searrow \\ \qquad \qquad \qquad -10 < -2x \leq 2 \\ \qquad \qquad \qquad \swarrow \quad \searrow \\ +7 \\ \qquad \qquad \qquad -3 < -2x + 7 \leq 9 \end{array}$$

$$\therefore -2x + 7 \in \langle -3; 9]$$