

# ALGEBRA

2th

Sesión I

RETROALIMENTACIÓN

TOMO I



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# HELICO RETRO

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## CHAPTER I

1. Calcule el valor de **6M**

$$M = \left(\frac{6}{7}\right)^{-1} + \left(\frac{3}{2}\right)^{-1} - \left(\frac{6}{11}\right)^{-1} + \left(\frac{6}{5}\right)^{-1}$$

**RESOLUCIÓN**

$$M = \left(\frac{7}{6}\right)^1 + \left(\frac{2}{3}\right)^1 - \left(\frac{11}{6}\right)^1 + \left(\frac{5}{6}\right)^1$$

$$M = \frac{7}{6} + \frac{4}{6} - \frac{11}{6} + \frac{5}{6} = \frac{5}{6}$$

$$6M = 6 \times \frac{5}{6}$$

$$\boxed{6M = 5}$$

RECORDEMOS

$$\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$$

$$a \wedge b \neq 0$$

**Nota:**

$$\left(\frac{2}{3}\right) = \left(\frac{4}{6}\right)$$

## 2. Efectúe

$$R = \frac{3^{-3}}{3^{-5}} + \frac{4^6}{4^4} + \frac{6^1}{6^{-1}}$$

## RESOLUCIÓN

$$R = 3^{-3-(-5)} + 4^{6-4} + 6^{1-(-1)}$$

$$R = 3^2 + 4^2 + 6^2$$

$$R = 9 + 16 + 36$$

$$R = 61$$

## RECORDEMOS

$$\frac{x^m}{x^n} = x^{m-n}; x \neq 0$$

## 3. A qué es igual

$$D = \frac{2^{(-5)^2} \cdot 2^{-5^2} \cdot 2^{3^2}}{(2^3)^{2^2} \cdot 2^{-3}}$$

RESOLUCIÓN

$$D = \frac{2^{(-5)^4} \cdot 2^{-5^4} \cdot 2^9}{(2^3)^4 \cdot 2^{-3}} = \frac{2^{5^4} \cdot 2^{-5^4} \cdot 2^9}{2^{12} \cdot 2^{-3}} = \frac{2^9}{2^9}$$

$$\rightarrow \boxed{D = 1}$$

RECORDEMOS

Nota:

$$(-5)^4 = 5^4$$

$$x^n \cdot x^m = x^{n+m}$$

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## CHAPTER II



4. Halle el equivalente de:

$$R = \sqrt[5]{\frac{243x^{13}y^{22}}{x^3y^2}}$$

RESOLUCIÓN

$$R = \sqrt[5]{243x^{10}y^{20}}$$

$$R = \sqrt[5]{243} \cdot \sqrt[5]{x^{10}} \cdot \sqrt[5]{y^{20}}$$

$$\rightarrow R = 3x^2y^4$$

RECORDEMOS

$$\sqrt[n]{xy} = \sqrt[n]{x} \cdot \sqrt[n]{y}$$

$$(\sqrt[n]{a})^m = a^{\frac{m}{n}}; m, n \in \mathbb{Z}; n \geq 2$$

## 5. Reduzca

$$F = \frac{\sqrt[5]{\sqrt[3]{\sqrt[4]{x^{70}}}}}{\sqrt[60]{x^{10}}} ; x \neq 0$$

## RESOLUCIÓN

$$F = \frac{\sqrt[5]{\sqrt[3]{\sqrt[4]{x^{70}}}}}{\sqrt[60]{x^{10}}} = \frac{\sqrt[5 \times 3 \times 4]{x^{70}}}{\sqrt[60]{x^{10}}} = \frac{\sqrt[60]{x^{70}}}{\sqrt[60]{x^{10}}} = \sqrt[60]{\frac{x^{70}}{x^{10}}} = \sqrt[60]{x^{60}}$$

$$F = x$$

## RECORDEMOS

$$\sqrt[m]{\sqrt[n]{\sqrt[p]{x}}} = \sqrt[m \times n \times p]{x}$$





## 6. Efectúe

$$T = \sqrt{(9)^5} + \sqrt[4]{(625)^3} + \sqrt[4]{(16)^3}$$

### RESOLUCIÓN

$$T = (\sqrt{9})^5 + (\sqrt[4]{625})^3 + (\sqrt[4]{16})^3$$

$$T = (3)^5 + (5)^3 + (2)^3$$

$$T = 243 + 125 + 8$$

$$T = 376$$

### RECORDEMOS

$$\sqrt[n]{a^m} = (\sqrt[n]{a})^m;$$
$$m, n \in \mathbb{Z}; n \geq 2$$

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## CHAPTER III



7. Si:

$$75^{7x+3} = 75^{2x+13}$$

Halle el valor de x

**RESOLUCIÓN**

$$\cancel{7}5^{7x+3} = \cancel{7}5^{2x+13}$$

$$\cancel{5}^{7x+3} = \cancel{5}^{2x+13}$$

$$7x + 3 = 2x + 13$$

$$7x - 2x = 13 - 3$$

$$x = 2$$

RECORDEMOS

$$a^x = a^y \rightarrow x = y$$

$$\forall a \in \mathbb{R} - \{-1; 0; 1\}$$

8. Calcula el valor de  $m$ , si

$$2^{m-3} + 2^{m-2} + 2^{m-1} = 14$$

### RESOLUCIÓN

$$2^m \cdot 2^{-3} + 2^m \cdot 2^{-2} + 2^m \cdot 2^{-1} = 14$$

$$2^m (2^{-3} + 2^{-2} + 2^{-1}) = 14$$

$$2^m \left( \frac{1}{8} \right) = 14$$

$$2^m = 14 \cdot 8$$

$$m = 4$$

### RECORDEMOS

$$x^n \cdot x^m = x^{n+m}$$

$$a^x = a^y \rightarrow x = y$$

$$\forall a \in \mathbb{R} - \{-1; 0; 1\}$$



9. Halle el valor de p:

$$\left(\frac{11}{16}\right)^{16p-48} = 1$$

RESOLUCIÓN

$$\left(\frac{11}{16}\right)^{16p-48} = \left(\frac{11}{16}\right)^0$$

$$16p - 48 = 0$$

$$p = 3$$

RECORDEMOS

Nota:

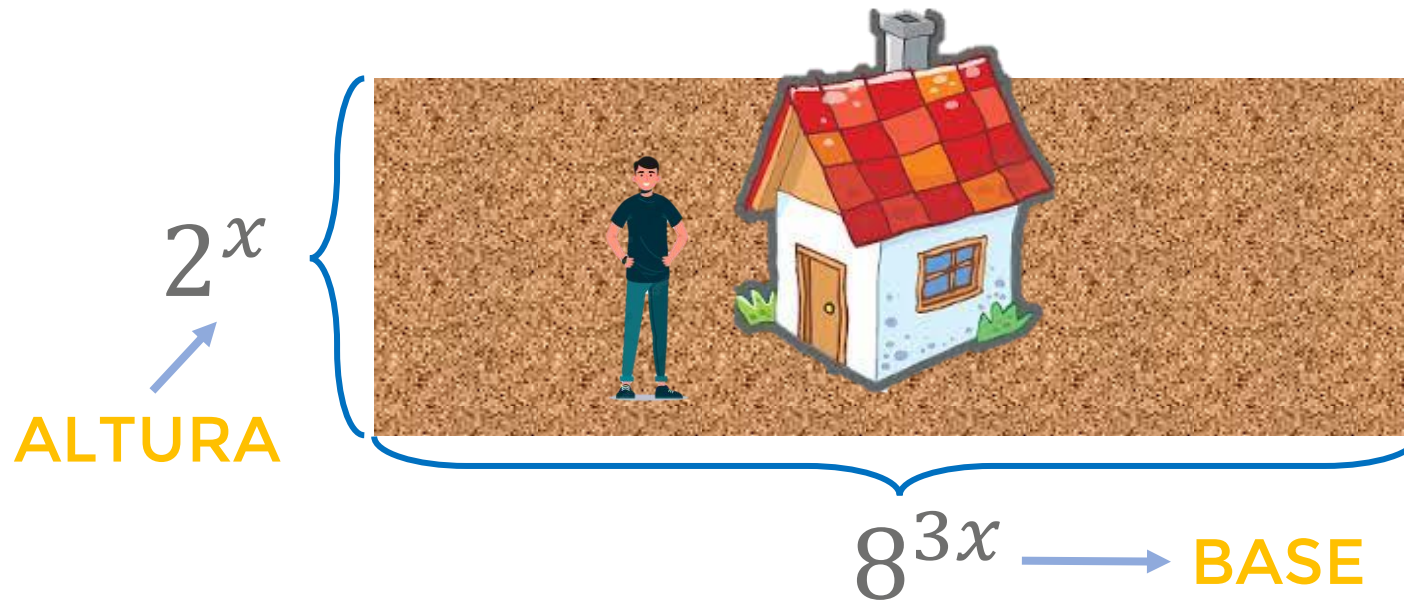
$$\left(\frac{11}{16}\right)^0 = 1$$

$$a^x = a^y \rightarrow x = y$$

$$\forall a \in \mathbb{R} - \{-1; 0; 1\}$$



- 10.** Roberto heredó el siguiente terreno rectangular, al cuál le desea calcular su área para así comenzar una construcción.



Al realizar la medición del área le resultó  $1024 \text{ m}^2$ . Halle el valor de  $x$ .

### RESOLUCIÓN

Área del terreno

$$8^{3x} \times 2^x = 1024$$

$$(2^3)^{3x} \times 2^x = 1024$$

$$2^{9x} \times 2^x = 1024$$

$$2^{10x} = 2^{10}$$

$$10x = 10$$

$$x = 1$$