



ALGEBRA

2th
SESIÓN I

HELICOASESORI

A

TOMO 1



 **SACO OLIVEROS**



1

Efectuar

$$P = \frac{\left(\frac{1}{3}\right)^{-3} + \left(\frac{1}{2}\right)^{-5} + \left(\frac{1}{5}\right)^{-2}}{\left(\frac{1}{20}\right)^{-1} - \left(\frac{1}{8}\right)^{-1}}$$

Recordemos:

$$\left(\frac{A}{B}\right)^{-n} = \left(\frac{B}{A}\right)^n$$

Resolución:

$$P = \frac{3^3 + 2^5 + 5^2}{20^1 - 8^1} = \frac{27 + 32 + 25}{20 - 8} = \frac{84}{12}$$

$$\therefore P = 7$$



2

Simplifiqu

e

$$T = \frac{9^{n+1} \cdot 27^{2n+3}}{81^{2n+2}}$$

Recordemos:

$$(a^m)^n = a^{m \cdot n}$$

Resolución:

Descomponiendo las bases:

$$T = \frac{(3^2)^{n+1} \cdot (3^3)^{2n+3}}{(3^4)^{2n+2}} = \frac{3^{2n+2} \cdot 3^{6n+9}}{3^{8n+8}} = \frac{3^{8n+11}}{3^{8n+8}} = 3^3$$

$$\therefore T = 27$$



3

Reduzca

$$W = \frac{2^{5m+3} - 2^{5m+1} + 2^{5m+2}}{2^{5m+1}}$$

Recordemos:

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

Resolución:

$$W = \frac{2^{5m} \cdot 2^3 - 2^{5m} \cdot 2^1 + 2^{5m} \cdot 2^2}{2^{5m} \cdot 2^1} = \frac{\cancel{2^{5m}}(2^3 - 2^1 + 2^2)}{\cancel{2^{5m}} \cdot 2^1}$$

$$W = \frac{8 - 2 + 4}{2} = \frac{10}{2}$$

$$\therefore W = 5$$



4

Calcule el valor de A

$$A = \sqrt[5]{\sqrt[7]{\sqrt[5]{\sqrt[7]{\sqrt[5]{\sqrt[7]{7^{105}}}}}}}$$

Resolución:

$$A = \sqrt[5 \cdot 7 \cdot 5 \cdot 7]{7^{105}} = \sqrt[5 \cdot 7]{7^{105}}$$

$$A = \sqrt[35]{7^{105}} = 7^{\frac{105}{35}} = 7^3$$

$$\therefore A = 343$$

Recordemos:

$$\sqrt[m]{\sqrt[n]{\sqrt[p]{a}}} = \sqrt[mnp]{a}$$

$$\sqrt[n]{a^m} = a^{\frac{m}{n}}$$



5

Simplifique

$$P = \sqrt[5]{\frac{\sqrt{2} \cdot \sqrt{2} \cdot \sqrt{2} \dots \sqrt{2} \text{ (32 factores)}}{\sqrt[3]{2} \cdot \sqrt[3]{2} \cdot \sqrt[3]{2} \dots \sqrt[3]{2} \text{ (33 factores)}}}$$

Resolución:

$$P = \sqrt[5]{\frac{\sqrt{2}^{32}}{\sqrt[3]{2}^{33}}} = \sqrt[5]{\frac{2^{16}}{2^{11}}} = \sqrt[5]{2^5}$$

$$\therefore P = 2$$

Recordemos:

$$\underbrace{a \cdot a \cdot a \dots a}_{n \text{ factores}} = a^n$$

$$\sqrt[n]{a^m} = a^{\frac{m}{n}}$$



6 Determine el valor de “x”

$$2^{x+4} + 2^{x+1} + 2^x = 608$$

Resolución:

$$2^x \cdot 2^4 + 2^x \cdot 2^1 + 2^x = 608$$

$$2^x(2^4 + 2^1 + 1) = 608$$

$$2^x(16 + 2 + 1) = 608$$

$$2^x(19) = 608$$

Recordemos:

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

$$2^x = \frac{608}{19}$$

$$2^x = 32$$

$$2^x = 2^5$$

$$\therefore x = 5$$

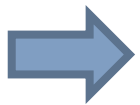


7 Determine el valor de
“**x**”

$$\left(\frac{3}{5}\right)^{3x-12} = 1$$

Resolución:

$$\left(\frac{3}{5}\right)^{3x-12} = 1 = \left(\frac{3}{5}\right)^0$$



$$3x - 12 = 0$$

$$\therefore x = 4$$

Recordemos:

$$a^0 = 1, \forall a \neq 0$$



8 Determine el valor de "x"

$$4^{2x+1} = 8^{x-1}$$

Resolución:

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

$$\Rightarrow \cancel{2}^{4x+2} = \cancel{2}^{3x-3}$$

$$\Rightarrow 4x + 2 = 3x - 3$$

$$\therefore x = -5$$

Recordemos:

- $4 = 2^2$
- $8 = 2^3$



9

Simplifique

$$W = 25^{8^{-27} \cdot 3^{-1}}$$

$$W = 25^{8^{-27} \cdot \frac{1}{3}}$$

$$W = 25^{8^{-\frac{1}{3}}}$$

$$W = 25^{\frac{1}{2}} = \sqrt{25}$$

$$\therefore W = 5$$

Recordemos:

$$\blacksquare 7^{-1} = \left(\frac{1}{7}\right)$$

$$\blacksquare \left(\frac{1}{4}\right)^{\frac{1}{2}} = \sqrt{\frac{1}{4}} = \frac{1}{2}$$



10 Indique el exponente final de "x"

$$P = \sqrt[3]{x^3 \cdot \sqrt{x^4 \cdot \sqrt{x}} \cdot \sqrt[12]{x^3}}$$

$$P = \sqrt[3]{x^3 \cdot \sqrt{x^4 \cdot \sqrt{x^1}} \cdot \sqrt[12]{x^3}} ; x \neq 0$$

$$P = \sqrt[3 \cdot 2 \cdot 2]{x^{(3 \cdot 2 + 4)2 + 1}} \cdot \sqrt[12]{x^3}$$

$$P = \sqrt[12]{x^{21}} \cdot \sqrt[12]{x^3}$$

Recordemos:

$$\sqrt[m]{x^a} \cdot \sqrt[n]{x^b} \cdot \sqrt[p]{x^c} = \sqrt[mnp]{x^{(an+b)p+c}}$$

$$P = \sqrt[12]{x^{21} \cdot x^3}$$

$$P = \sqrt[12]{x^{24}} = x^2$$

$$\therefore P = 2$$