ALGEBRA

2th

SECONDARY

ASESORIA SESION 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:

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

$$\boxed{\therefore P=7}$$

2 Simplifique

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

Recordemos:

$$(a^m)^n = a^{m.n}$$

Resolución:

Descomponiendo las bases:

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

$$\boxed{\therefore T = 27}$$

3 Reduzca

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

Recordemos:

$$a^{m+n} = a^m . a^n$$

Resolución:

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

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

$$\boxed{\therefore W = 5}$$

4

Calcule el valor de A

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

Recordemos:

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

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

Resolución:

$$A = \sqrt[\sqrt{5}.\sqrt{7}.\sqrt{5}.\sqrt{7}]{7^{105}} = \sqrt[5.7]{7^{105}}$$

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

$$\boxed{\therefore\ A = 343}$$

5 Simplifique

$$P=\sqrt[5]{\frac{\sqrt{2}.\sqrt{2}.\sqrt{2}\ldots\ldots\sqrt{2}\ \ (32\ factores)}{\sqrt[3]{2}.\sqrt[3]{2}.\sqrt[3]{2}\ldots\ldots\sqrt[3]{2}\ \ (33\ factores)}}$$

Resolución:

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

$$\boxed{\therefore P=2}$$

Recordemos:

$$\underbrace{a.a.a\ldots\ldots a}_{n\ factores}=a^{n}$$

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

6 Determine el valor de “x”

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

Recordemos:

$$a^{m+n} = a^{m}.a^{n}$$

Resolución:

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

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

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

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

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

$$2^{x} = 32$$

$$2^{x} = 2^{5}$$

$$\boxed{\therefore x = 5}$$

7 Determine el valor de "x"

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

Resolución:

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

$$\Rightarrow \quad 3x - 12 = 0$$

$$\boxed{\therefore\ x = 4}$$

Recordemos:

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

8 Determine el valor de "x"

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

Recordemos:

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

Resolución:

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

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

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

$$\boxed{\therefore\ x = -5}$$

9 Simplifique

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

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

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

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

$$\therefore \; W = 5$$

Recordemos:

- $7^{-1} = \left(\frac{1}{7}\right)$
- $\left(\frac{1}{4}\right)^{\frac{1}{2}} = \sqrt{\frac{1}{4}} = \frac{1}{2}$

10 Indique el exponente final de "x"

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

Recordemos:

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

$$P = \sqrt[3]{x^3 . \sqrt[2]{x^4 . \sqrt[2]{x^1}} .} \sqrt[12]{x^3} \quad ; x \neq 0$$

$$P = \sqrt[3.2.2]{x^{(3.2+4)2+1}} . \sqrt[12]{x^3}$$

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

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

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

$$\boxed{\therefore \quad P = 2}$$