Words are understood by knowledge and meaning by experience ..!

➤ $a^m \times a^n = a^{m+n}$, a^m of $a^n \Rightarrow a^{m+n}$

➤ $a^m \div a^n = a^{m-n}$

$a^{-m} = \dfrac{1}{a^{+m}}$

➤ $(a^m)^n = (a^n)^m = a^{mn}$

\# $(2^4)^4 \Rightarrow 2^{4 \times 4}$

$\Rightarrow 2^{16}$

$\dfrac{1}{a^{-n}} = a^{+n}$

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

\# $2^{4^4} \Rightarrow 2^{4 \times 4 \times 4 \times 4}$

$\Rightarrow 2^{256}$

$\left(\dfrac{a}{b}\right)^{-m} = \left(\dfrac{b}{a}\right)^{+m}$

➤ $\boxed{a^0 = 1}$

$(a^m)^2 \Rightarrow a^{2m}$

$a^{m^2} \Rightarrow (a)^{m^2}$

$$a^{-n} = \frac{1}{a^n}$$

$$a^n = \frac{1}{a^{-n}}$$

- If $a^x = k$ then $a = k^{1/x}$

- If $a^x = a^y$, then $X = Y$

- $\sqrt[n]{a} = a^{\frac{1}{n}}$

- $\left(\sqrt[n]{a}\right)^m = a^{\frac{m}{n}}$

$(0.04)^{-1.5} = ?$

$(0.2^2)^{-1.5}$

$\Rightarrow (0.2)^{-3}$

$\Rightarrow \dfrac{1}{(0.2)^3}$

$\Rightarrow \dfrac{1}{0.008} \times \dfrac{1000}{1000}$

$\Rightarrow \dfrac{1000}{8}$

$\Rightarrow \underline{125}$

$\left(\dfrac{4}{100}\right)^{-3/2}$

$\Rightarrow \left(\dfrac{100}{4}\right)^{+3/2}$

$\Rightarrow (25)^{3/2}$

$\Rightarrow (5^2)^{3/2}$

$\Rightarrow 5^3$

$\Rightarrow \underline{125}$

$$(25)^{x+y} = 1 \quad , \quad (3)^{4x+y} = \frac{1}{27} \quad , \quad xy = ?$$

A) -2

B) -1

C) 0

D) 1

Sol:-

$(25)^{x+y} = (25)^0$

$x + y = 0 \quad - \textcircled{1}$

$(3)^{4x+y} = (3)^{-3}$

$4x + y = -3 \quad - \textcircled{11}$

$3x + (x+y) = -3$

$3x + 0 = -3$

$\boxed{x = -1}$

$x + y = 0$

$-1 + y = 0$

$\boxed{y = +1}$

$xy = -1 \times 1$

$\Rightarrow \underline{-1} \text{ Ans.}$

$a^0 = 1$

\# $a^m = a^n$

$\boxed{m = n}$

\# $a^m = b^m$

$\boxed{a = b}$

$\frac{1}{27} = \frac{1}{(3)^3} = 3^{-3}$

$$\frac{(243)^{n/5} \times (3)^{2n+1}}{(9)^n \times (3)^{n-1}} = ?$$

A) 3

B) 6

c) 9

D) 12

$a^m \times a^n \Rightarrow a^{m+n}$

$243 = (3)^5$

$3^{2n+1} = 3^{2n} \times 3^1$

Sol:-

$$\frac{(3^5)^{n/5} \times 3^{2n} \times 3^1}{(3^2)^n \times 3^n \div 3^1}$$

$$\frac{3^n \times 3^{2n} \times 3^1}{3^{2n} \times 3^n \times \frac{1}{3}} = \frac{3}{\frac{1}{3}} \Rightarrow 3 \times 3$$

$$\Rightarrow \underline{9}$$

$$\frac{3 \times (27)^{n+1} + 9 \times (3)^{3n-1}}{8 \times (3)^{3n} - 5 \times (27)^n} = ?$$

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

A) $(3)^{3n}$

B) 3^4

C) 27

D) 28

Sol:-

$$\Rightarrow \frac{3 \times 3^{3n+3} + (3)^2 \times (3)^{3n-1}}{8 \times 3^{3n} - 5 \times (3^3)^n}$$

$$\Rightarrow \frac{3 \times 3^{3n} \times 3^3 + 3^2 \times 3^{3n} \times \frac{1}{3}}{8 \times 3^{3n} - 5 \times 2^{3n}}$$

$$\Rightarrow \frac{3^4 + 3}{8 - 5}$$

$$\Rightarrow \frac{3^4 + 3}{3} \Rightarrow \frac{81 + 3}{3}$$

$$\Rightarrow 3^3 + 1$$

$$\Rightarrow 27 + 1$$

$$\Rightarrow \boxed{28}$$

$$\frac{(9)^n \times (3)^2 \times \left(3^{-n/2}\right)^{-2} - (27)^n}{(3)^{3m} \times (2)^3} = \frac{1}{27}, \quad \boxed{m-n} = ?$$

A) 1

B) −2

C) −1

D) 2

Sol:−

$(3^{-n/2})^{-2} \Rightarrow 3^n$

$$\Rightarrow \frac{3^{2n} \times 3^2 \times 3^n - 3^{3n}}{3^{3m} \times 8} = 3^{-3}$$

$\dfrac{1}{27} = \dfrac{1}{3^3} \text{ or } 3^{-3}$

$$\Rightarrow \frac{3^{3n} \times 3^2 - 3^{3n}}{3^{3m} \times 8} = 3^{-3}$$

$\dfrac{(3)^{3n}}{(3)^{3m}} = 3^{-3}$

$3^2 - 1 \Rightarrow 9 - 1$

$\Rightarrow 8$

$$\frac{3^{3n}\left(3^2 - 1\right)}{3^{3m} \times 8} = 3^{-3}$$

$(3)^{3n-3m} = (3)^{-3}$

$m - n = \pm 1$

$3n - 3m = -3$

$n - m = -1$

$$\left[2^{m^2} \div (2^m)^2 \right]^{\frac{1}{m}} = 8, \quad m = ?$$

A) 3

B) 6

C) −3

D) −6

E) NOT

Sol:−

$$\left[2^{m^2} \div 2^{2m} \right]^{\frac{1}{m}} = 2^3$$

$$\left(2^{m^2-2m} \right)^{\frac{1}{m}} = 2^3$$

$$2^{m(m-2) \times \frac{1}{m}} = 2^3$$

$$2^{(m-2)} = 2^3$$

$$m - 2 = 3, \quad \boxed{m = 5}$$

Note:−

$$(2^4)^4 \Rightarrow 2^{4 \times 4}$$
$$\Rightarrow 2^{16}$$

$$2^{4^4} \Rightarrow 2^{4 \times 4 \times 4 \times 4}$$
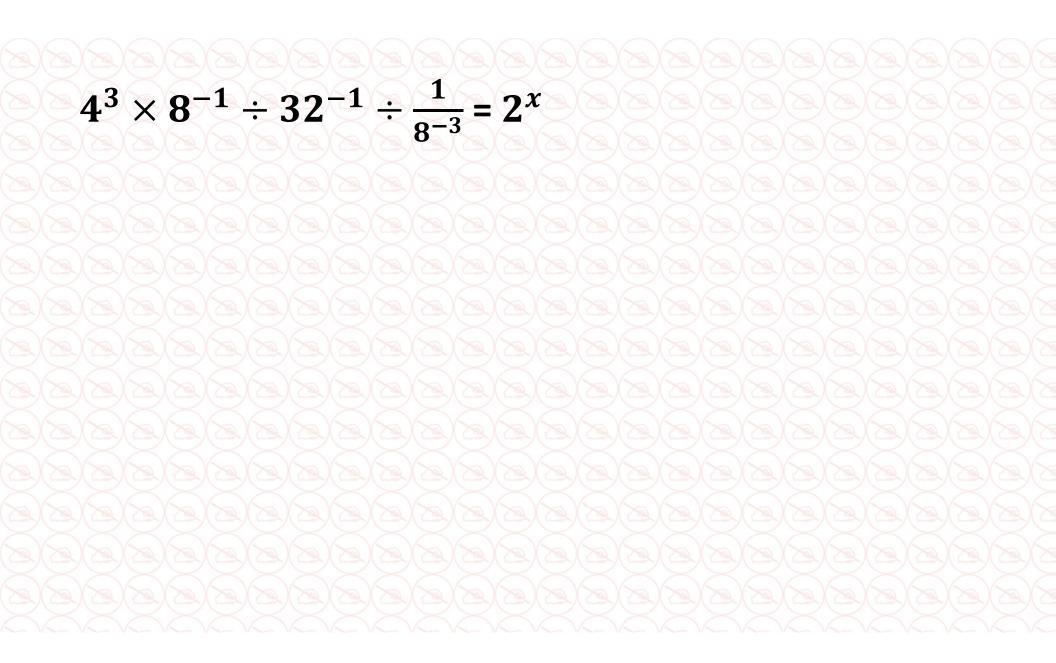$$\Rightarrow 2^{256}$$

$$m^2 - 2m$$

$$\left[m(m-2) \right]^{\frac{1}{m}}$$

$$\sqrt[n]{\frac{(9)^{n+\frac{1}{4}} \times \sqrt{3 \times 3^{-n}}}{3 \times \sqrt{3^{-n}}}} = ?$$

H.W.

A) 3

B) 3^2

C) 3^3

D) $\sqrt[n]{3}$

$$4^3 \times 8^{-1} \div 32^{-1} \div \frac{1}{8^{-3}} = 2^x$$

$$\frac{1}{2} + \frac{1}{5} + \frac{1}{8} + \frac{1}{11} + \frac{1}{20} + \frac{1}{41} + \frac{1}{110} + \frac{1}{1640} = \ ?$$