

infinite series \rightarrow

$$\sqrt{a \cdot \sqrt{a \cdot \sqrt{a \dots \dots \infty}}} = a$$

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$$a > 0$$

माना $x = \sqrt{a \sqrt{a \sqrt{a \dots \dots \infty}}}$

$$x = \sqrt{a \times x}$$

$$\Rightarrow \cancel{x} = a \times \cancel{x}$$

$$x = a \checkmark$$



$$\sqrt[n]{a \sqrt[n]{a \sqrt[n]{a} \dots}}$$

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

$$\sqrt[n]{a \div \sqrt[n]{a \div \sqrt[n]{a} \div \dots}}$$

$$= \sqrt[n+1]{a}$$

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$$\text{ज्या } x = \sqrt[n]{a \div \sqrt[n]{a \div \sqrt[n]{a \div \dots}}}$$

$$x = \sqrt[n]{a \div x}$$

$$x = \sqrt[n]{\frac{a}{x}} \Rightarrow x^n = \frac{a}{x} \Rightarrow x^{n+1} = a$$

$$x = \sqrt[n+1]{a}$$





$$\sqrt{\sqrt{a \cdot \sqrt{a \cdot \sqrt{a \dots \dots n \text{ times}}}}} = a^{\frac{2^n - 1}{2^n}}$$

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Frage →

$$\sqrt{\sqrt{\sqrt{\sqrt{5}}}} = 5^{\frac{1}{16}}$$

$$\sqrt{5 \cdot \sqrt{5 \cdot \sqrt{5 \cdot \sqrt{5}}}} = 5^{\frac{15}{16}}$$

$$= 5^{\frac{1}{16}} \times 5^{\frac{1}{8}} \times 5^{\frac{1}{4}} \times 5^{\frac{1}{2}}$$

$$= 5^{\frac{1}{16} + \frac{1}{8} + \frac{1}{4} + \frac{1}{2}}$$

$$= 5^{\frac{1+2+4+8}{16}} = 5^{\frac{15}{16}}$$



93.

$$\sqrt{12 \sqrt{12 \sqrt{12 \sqrt{12 \dots \infty}}}} = ?$$

[A] 8

[C] 36

[B] 12

[D] 6

95. $\sqrt[3]{64 \sqrt[3]{64 \sqrt[3]{64} \dots}} = ?$

[A] 4

[B] 8

[C] 16

[D] $4\sqrt{2}$

$= \sqrt[2]{64} = 8$

96.

$$\sqrt[4]{0.512 \sqrt[4]{0.512 \sqrt[4]{0.512 \dots \dots \dots \infty}}}$$

[A] 0.16

[B] 0.8

[C] 0.12

[D] 0.08

$$= \sqrt[3]{.512}$$

$$= .8$$

$$\sqrt[5]{243} \sqrt[5]{243} \sqrt[5]{243} \dots \infty = \sqrt[5]{243} = 3 \checkmark$$

$$\sqrt[3]{125} \sqrt[3]{125} \sqrt[3]{125} \dots = \sqrt[3]{125} = 5$$



$$\sqrt[2]{\sqrt[2]{\sqrt[2]{\sqrt[2]{31}}}} = 31^{\frac{1}{16}}$$
$$= \sqrt[16]{31}$$

$$\sqrt[5]{\sqrt[4]{\sqrt[3]{\sqrt[2]{31}}}} = 31^{\frac{1}{120}}$$
$$= \sqrt[120]{31}$$



97.

Find

$$\sqrt{12 \sqrt{12 \sqrt{12 \sqrt{12 \sqrt{12 \sqrt{12}}}}}} = ?$$

$$12^{\frac{63}{64}}$$

[A] $12^{\frac{32}{31}}$

[B] $12^{\frac{64}{63}}$

[C] $12^{\frac{31}{32}}$

[D] $12^{\frac{63}{64}}$



98.

If

$$\sqrt[3]{11 \sqrt[3]{11 \sqrt[3]{11 \sqrt[3]{11 \sqrt[3]{11}}}}} = 121^k \text{ then } k=?$$

$$(12)^k$$

$$k = \frac{121}{486} \checkmark$$

$$\frac{1}{243} + \frac{1}{81} + \frac{1}{27} + \frac{1}{9} + \frac{1}{3}$$

||

$$\frac{1+3+9+27+81}{243}$$

||

=

$$\frac{121}{243} = 12^k$$

$$\begin{aligned}
 \sqrt[5]{7 \sqrt[4]{7 \sqrt[3]{7 \sqrt{7}}}} &= 7^{\frac{1}{20} + \frac{1}{60} + \frac{1}{20} + \frac{1}{5}} \\
 &= 7^{\frac{1+2+6+4}{20}} \\
 &= 7^{\frac{13}{20}} \checkmark
 \end{aligned}$$



99. If $x^m = \sqrt[14]{x\sqrt{x\sqrt{x}}}$, then what is the value of m?

यदि $x^m = \sqrt[14]{x\sqrt{x\sqrt{x}}}$ है तो m का मान क्या है?

- [A] $\frac{1}{8}$
- [C] $\frac{3}{4}$

- [B] $\frac{1}{4}$
- [D] $\frac{7}{4}$

$$x^m = x^{\frac{1}{14} + \frac{1}{28} + \frac{1}{56}}$$

$$x^m = x^{\frac{1}{8}}$$

100.

$$\sqrt[2]{27 \div \sqrt[2]{27 \div \sqrt[2]{27 \div \sqrt[2]{27 \dots \dots \dots \infty}}}} = ?$$

[A] 3

[B] $3\sqrt{3}$

[C] $\sqrt{3}$

[D] 9

$$\sqrt[3]{27} = 3$$

101. If $\sqrt{P} \sqrt{P} \sqrt{P} \sqrt{P} \dots \infty = \frac{1}{5}$, then find P?

[A] 625

[C] 5^{-5}

[B] 5^{-10}

[D] 0.04



$$\begin{aligned} \sqrt{P} \cdot \frac{1}{5} &= \frac{1}{5} \\ P^{\frac{1}{2}} &= 5^{-1} \\ \Rightarrow P &= 5^{-2} \end{aligned}$$

सामा x =

$$\sqrt[m]{a \cdot \sqrt[n]{b \cdot \sqrt[m]{a \cdot \sqrt[n]{b \dots}}}}$$

$$x = \sqrt[m]{a \cdot \sqrt[n]{b x}}$$

$$x^n = a \Rightarrow x = \sqrt[n]{a}$$

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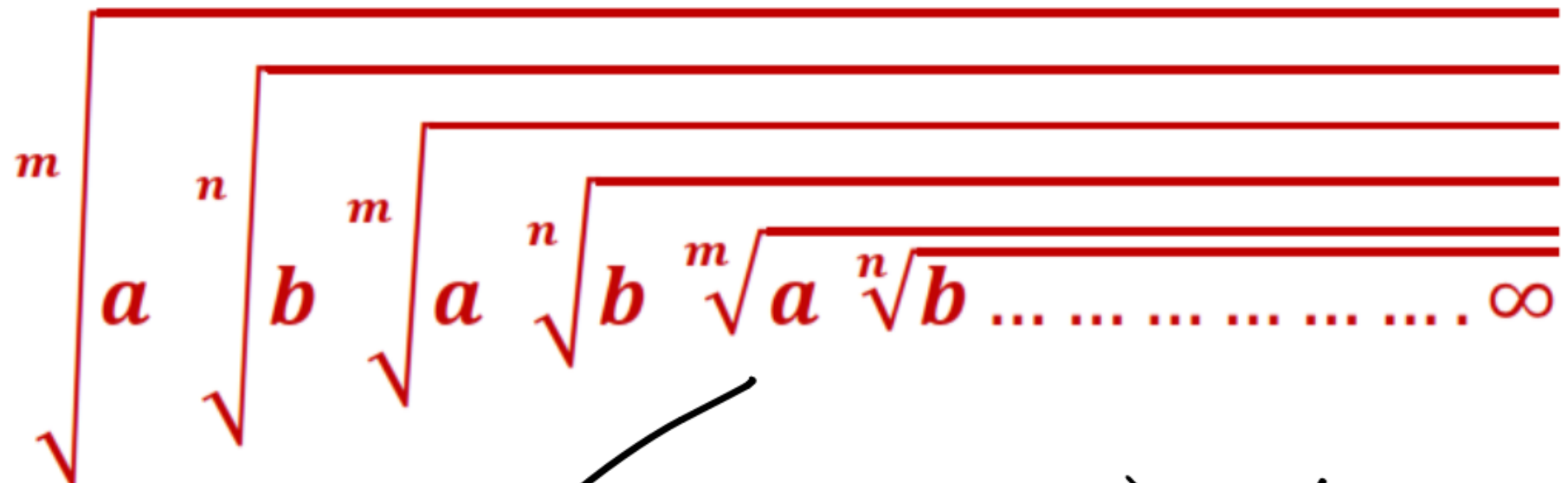
$$x^m = a \cdot \sqrt[n]{b x}$$

$$\frac{x^m}{x} = a \cdot b \Rightarrow x^{m-1} = a \cdot b$$

$$x = \sqrt[m-1]{a \cdot b}$$



102.



$$= \sqrt[mn]{a^n \times b}$$

?

[A]

$$\sqrt[mn-1]{a^n b}$$

[C]

$$\sqrt[mn-1]{b^n a}$$

[B]

~~$$\sqrt[mn]{ab}$$~~

[D]

~~$$\sqrt[mn+1]{a^n b}$$~~

103. Find

$$\sqrt[2]{2 \times \sqrt[3]{4 \times \sqrt[2]{2 \times \sqrt[3]{4 \times \sqrt[2]{2 \times \sqrt[3]{4 \times \dots \dots \dots \infty}}}}} = ?$$

- [A] $\sqrt{2}$
- [c] 4

- [B] 2
- [D] $4\sqrt{2}$

$$\begin{aligned} &= \sqrt[5]{2^3 \times 4} \\ &= \sqrt[5]{32} \\ &= 2 \end{aligned}$$