



REET 2025

LEVEL-2



वंदन बैच

MATHS

Algebra

(बीजगणित)



LIVE

29-01-2025 05:00 PM

Concept -

$$x + \frac{1}{x} = K$$

$$x - \frac{1}{x} = \sqrt{K^2 - 4}$$

① $x + \frac{1}{x} = \sqrt{5}$

$$x - \frac{1}{x} = ?$$

$$\Rightarrow \sqrt{(\sqrt{5})^2 - 4} = \sqrt{5 - 4} = \sqrt{1} = 1$$

$$x + \frac{1}{x} = K$$

दोनों पक्षों का वर्ग करने पर

$$\left(x + \frac{1}{x}\right)^2 = K^2$$

$$x^2 + \frac{1}{x^2} + 2 = K^2$$

$$x^2 + \frac{1}{x^2} = K^2 - 2 \quad \text{--- ①}$$

$$\begin{aligned} \left(x - \frac{1}{x}\right)^2 &= x^2 + \frac{1}{x^2} - 2 \\ &= K^2 - 2 - 2 \end{aligned}$$

$$x - \frac{1}{x} = \sqrt{K^2 - 4}$$

$$\textcircled{2} \quad x + \frac{1}{x} = \sqrt{7}$$

$$x - \frac{1}{x} = ?$$

$$\begin{aligned} \Rightarrow x - \frac{1}{x} &= \sqrt{(\sqrt{7})^2 - 4} \\ &= \sqrt{7 - 4} = \sqrt{3} \end{aligned}$$

$$\textcircled{3} \quad x + \frac{1}{x} = 2\sqrt{11}$$

$$x - \frac{1}{x} = ?$$

$$\begin{aligned} \Rightarrow x - \frac{1}{x} &= \sqrt{(2\sqrt{11})^2 - 4} \\ &= \sqrt{44 - 4} \\ &= \sqrt{40} \\ &= \sqrt{4 \times 10} \\ &= 2\sqrt{10} \end{aligned}$$

$$\begin{aligned} (2\sqrt{11})^2 &= 2 \times 2 \times \sqrt{11} \times \sqrt{11} \\ &= 4 \times 11 \\ &= 44 \end{aligned}$$

$$x - \frac{1}{x} = k$$

$$x + \frac{1}{x} = \sqrt{k^2 + 4}$$

$$\textcircled{4} \quad x - \frac{1}{x} = \sqrt{117}$$

$$x + \frac{1}{x} = ?$$

$$\begin{aligned} \Rightarrow x + \frac{1}{x} &= \sqrt{(\sqrt{117})^2 + 4} \\ &= \sqrt{117 + 4} = \sqrt{121} \\ &= 11 \end{aligned}$$

$$\textcircled{5} \quad x - \frac{1}{x} = \sqrt{6}$$

$$x + \frac{1}{x} = ?$$

$$\sqrt{(\sqrt{6})^2 + 4}$$

$$\sqrt{6 + 4} = \sqrt{10} \quad \underline{\text{Ans.}}$$

$$x + \frac{1}{x} = k$$

$$x^2 + \frac{1}{x^2} = k^2 - 2 = a$$

$$x^4 + \frac{1}{x^4} = a^2 - 2 = b$$

$$x^8 + \frac{1}{x^8} = b^2 - 2$$

$$\textcircled{6} \quad x + \frac{1}{x} = 3$$

$$x^8 + \frac{1}{x^8} = ?$$

$$\text{i} > x^2 + \frac{1}{x^2} = (3)^2 - 2 = 7$$

$$\text{ii} > x^4 + \frac{1}{x^4} = (7)^2 - 2 = 47$$

$$\text{iii} > x^8 + \frac{1}{x^8} = (47)^2 - 2 = 2209 - 2 = \underline{2207} \text{ Ans.}$$

$$\textcircled{7} \quad x + \frac{1}{x} = \sqrt{13}$$

$$x^4 + \frac{1}{x^4} = ?$$

$$\Rightarrow x^2 + \frac{1}{x^2} = (\sqrt{13})^2 - 2 = 13 - 2 = 11$$

$$x^4 + \frac{1}{x^4} = (11)^2 - 2 = 121 - 2 = 119 \quad \underline{\text{Ans.}}$$

$$\textcircled{8} \quad x + \frac{1}{x} = 3\sqrt{5}$$

$$x^4 + \frac{1}{x^4} = ?$$

$$\Rightarrow x^2 + \frac{1}{x^2} = (3\sqrt{5})^2 - 2$$

$$= (3 \times 3 \times 5) - 2$$

$$= 43$$

$$x^4 + \frac{1}{x^4} = (43)^2 - 2$$

$$= 1849 - 2 = 1847$$

$$x + \frac{1}{x} = K$$

$$x^3 + \frac{1}{x^3} = K^3 - 3K$$

$$\textcircled{9} \quad x + \frac{1}{x} = 2\sqrt{3}$$

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

$$= 8 \times 3\sqrt{3} - 6\sqrt{3}$$

$$= 24\sqrt{3} - 6\sqrt{3}$$

$$= 18\sqrt{3}$$

$$\frac{(\sqrt{x})^3}{x\sqrt{x}}$$

$$\textcircled{10} \quad x + \frac{1}{x} = 3\sqrt{5}$$

$$x^3 + \frac{1}{x^3} = (3\sqrt{5})^3 - 3(3\sqrt{5})$$

$$= 27 \times 5\sqrt{5} - 9\sqrt{5}$$

$$= 135\sqrt{5} - 9\sqrt{5}$$

$$= 126\sqrt{5}$$

$$\text{If } \begin{matrix} a = 12 \\ b = 14 \\ c = 16 \end{matrix} \left\{ \begin{matrix} 2 \\ 2 \end{matrix} \right\} 4$$

નો બતાડો, $a^2 + b^2 + c^2 - ab - bc - ca = ?$

$$\Rightarrow (12)^2 + (14)^2 + (16)^2 - (12 \times 14) - (14 \times 16) - (16 \times 12)$$

$$144 + 196 + 256 - 168 - 224 - 192$$

$$596 - 584$$

$$\textcircled{12}$$

Star Fish method -

$$\frac{2^2 + 2^2 + 4^2}{2}$$

$$\frac{4 + 4 + 16}{2} = \frac{24}{2} = 12$$

$a = 999$
 $b = 995$
 $c = 991$

તો બતાડો $a^2 + b^2 + c^2 - ab - bc - ca = ?$

$$\frac{16 + 16 + 64}{2}$$

$$\frac{96}{2} = 48$$

$a = 79$
 $b = 86$
 $c = 63$

તો બતાડો $a^2 + b^2 + c^2 - ab - bc - ca = ?$

$$\Rightarrow \frac{7^2 + 23^2 + 16^2}{2}$$

$$\frac{49 + 529 + 256}{2}$$

$$\frac{834}{2} = 417$$

$(x^{29} - x^{26} - x^{23} + 1)$ का factor (गुणखंड) $(x-1)$ है ?

$\Rightarrow$

$$x-1=0$$

$$x=1$$

$$(1)^{29} - (1)^{26} - (1)^{23} + 1$$

$$1 - 1 - 1 + 1$$

$$0$$

सत्य ?

असत्य ?