CDS/CAPF VIRAAT 2.0 2024

Algebra

Mathematics | Lecture - 01

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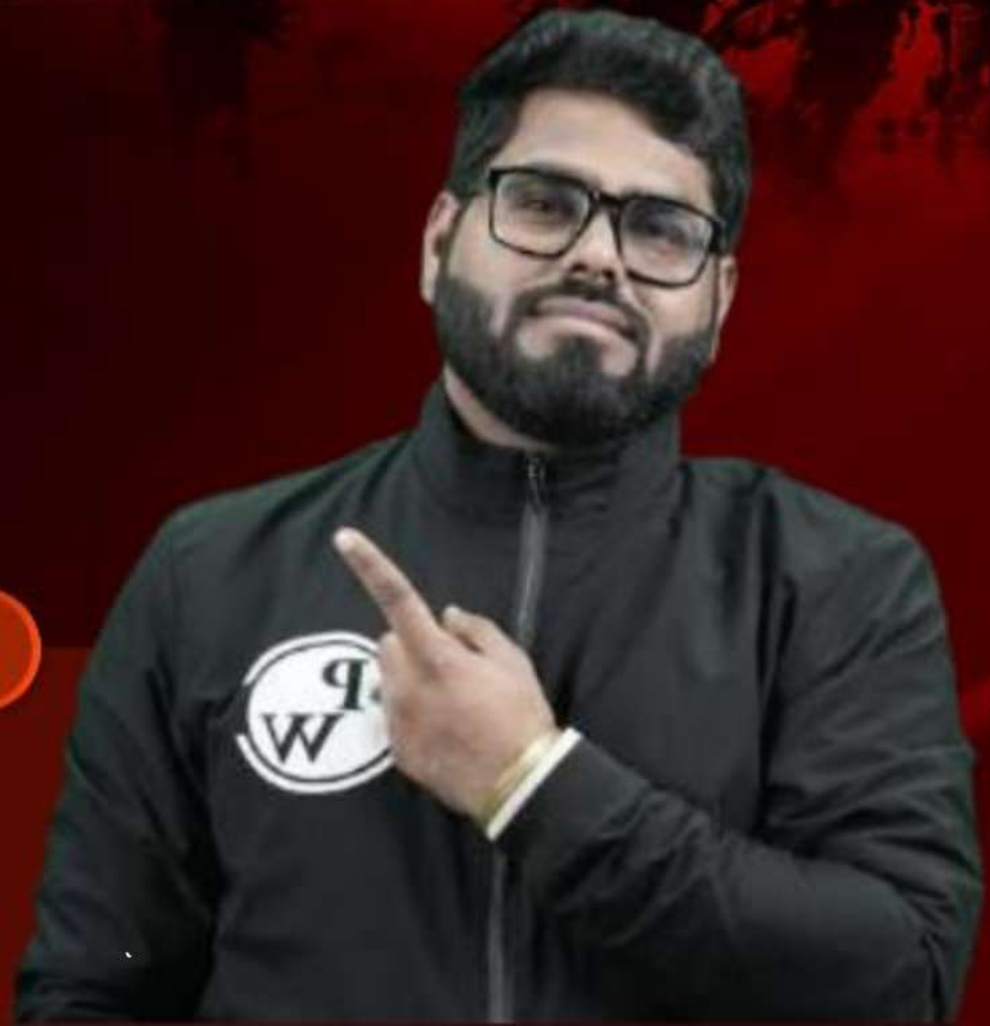


TOPICS *to be covered*

1. - Basic Formula
2. → Improper
3.

Algebra

Basics

$(a+b)^2$

Different logics

- Value putting,
- symmetry, degree
- etc.

CUBE FORMULA

- $(a + b)^3 = a^3 + b^3 + 3ab\,(a + b)$
- $a^3 + b^3 = (a + b)^3 - 3ab(a + b)$
- $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
- $(a - b)^3 = a^3 - b^3 - 3ab(a - b)$
- $a^3 - b^3 - (a - b)^3 + 3ab(a - b)$
- $a^3 - b^3 = (a - b)\,(a^2 + ab + b^2)$

SPECIAL CASE

- If $a^2 - ab + b^2 = 0$ then $a^3 + b^3 = 0$
- If $b = 1$, then $a^2 - a + 1 = 0$, then $a^3 + 1 = 0$ or $a^3 = -1$

$$(a+b)^2 = a^2+b^2+2ab$$

$$a^2+b^2 = (a+b)^2 - 2ab$$

$$(a+b)^2 = (a-b)^2 + 4ab$$

$$(a-b)^2 = a^2+b^2-2ab$$

$$a^2+b^2 = (a-b)^2 + 2ab$$

$$(a-b)^2 = (a+b)^2 - 4ab$$

$$a^2-b^2 = (a+b)(a-b)$$

$$(a+b)^2 - (a-b)^2 = 4ab$$

SPECIAL CASE

- If $a^2 + a + 1 = 0$ then $a^3 - 1 = 0$ $a^3 = 1$

SPECIAL CASE

- If $\frac{a}{b} + \frac{b}{a} = 1$ then $a^3 + b^3 = 0$

SPECIAL CASE

- If $\frac{a}{b} + \frac{b}{a} = -1$ then $a^3 - b^3 = 0$
- If $\frac{a}{b} + \frac{b}{a} = \frac{1}{a+b}$ then $a^3 - b^3 = 0$

SPECIAL CASE

- $a^3 + b^3 + c^3 - 3abc$

  $= \frac{1}{2}(a + b + c)[(a - b)^2 + (b - c)^2 + (c - a)^2]$

  $= (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

  $= (a + b + c)[(a + b + c)^2 - 3(ab + bc + ca)]$

- If $(a + b + c) = 0$

  Then $a^3 + b^3 + c^3 - 3abc = 0$

$a^3 + b^3 + c^3 - 3abc = 0$

- If $a^3 + b^3 + c^3 - 3abc = 0$

  a, b and c are distinct no then, $a + b + c = 0$

Some Important Values :

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

where $x = 1$

$\Rightarrow \tan\theta + \frac{1}{\tan\theta} = 2$

$\tan\theta + \cot\theta = 2$

$\tan^4\theta + \frac{1}{\tan^9\theta} = ?$

$1 + 1 = 2$

if $x + \frac{1}{x} = 2$

$x = ?$

① $x^9 + \frac{1}{x^7} = ?$

$x = 1 = 1 + 1 = 2$

$\tan \leftrightarrow \cot$

$\sin \leftrightarrow \operatorname{cosec}$

$\cos \leftrightarrow \sec$

$$m + \frac{1}{m+2} = 0$$

$$(m+2) + \frac{1}{(m+2)} = 2$$

$m+2 = 1$

$m = 1-2$

$m = -1$

$m+2 = x$

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

$x = 1$

$m+2 = 1$

$$(m+2)^5 + \frac{1}{(m+2)^5} = ?$$

$$(1)^5 + \frac{1}{(1)^5} = 1+1 = 2$$

Some Important Values :

$$(-1)^{\text{even}} = +1$$

$$(-1)^{\text{odd}} = -1$$

$$x + \frac{1}{x} = -2$$

$x = -1$

$$x^7 + \frac{1}{x^7} = (-1)^7 + \frac{1}{(-1)^7} = -1 - 1 = -2$$

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

$$x^8 + \frac{1}{x^7} = (-1)^8 + \frac{1}{(-1)^7} = 1 - 1 = 0$$

$\therefore$

Some Important Values :

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

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

$x^2 + 1 = x$

$(x^2 - x + 1) = 0$

$(x+1)(x^2 - x + 1) = 0$

$x^3 + 1 = 0$

$x^3 = -1$

$\left[x^{17} + \frac{1}{x^{17}}\right] \times \frac{x}{x}$

$\Rightarrow \frac{x^{18}}{x} + \frac{x}{x^{18}}$

$\Rightarrow \frac{(x^3)^6}{x} + \frac{x}{(x^3)^6}$

$= \frac{(-1)^6}{x} + \frac{x}{(-1)^6} = \left(\frac{1}{x} + x\right) = 1$

$\Rightarrow x^{17} + \frac{1}{x^{17}} = 1$

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

$x^3 = -1$

$x^{12} + \frac{1}{x^{12}} = (x^3)^4 + \frac{1}{(x^3)^4} = (-1)^4 + \frac{1}{(-1)^4} = 1+1 = 2$

$x^{15} + \frac{1}{x^{15}} = (x^3)^5 + \frac{1}{(x^3)^5} = (-1)^5 + \frac{1}{(-1)^5} = -1-1 = -2$

$x^{16} + \frac{1}{x^{16}} = x \times x^{15} + \frac{1}{x \times x^{15}} \Rightarrow x \times (x^3)^5 + \frac{1}{x(x^3)^5}$

$= x \times -1 + \frac{1}{x+1} = -\left(x + \frac{1}{x}\right)$

$= -1$

$x^{22} + \frac{1}{x^{22}} \Rightarrow x \times x^{21} + \frac{1}{x \times x^{21}}$

$\Rightarrow x \times \underbrace{(x^3)^7}_{=} + \frac{1}{x \times (x^3)^7}$

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

$x^3 = -1$

$x \times (-1)^7 + \frac{1}{x \times (-1)^7}$

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

$= -\underbrace{\left(x + \frac{1}{x}\right)}_{=} = -1$

$= x^{93} + x^{90} + x^{103} + x^{100} + x^{63} + x^{60} + x^6 + x^3 + 2$

$\Rightarrow x^{90}[x^3+1] + x^{100}[x^3+1]$

$x^3 = -1$

$-x+x$

0

0

2

if $x + \frac{1}{x} = 1$ then

$x^{303} + x^{300} + x^{203} + x^{200} + x^{96} + x^{93} + x^3 + 1$

$0+0+0-x+x+1$

$= 0$

Some Important Values :

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

$x^3 = 1$

Some Important Values :

$$x + \frac{1}{x} = \sqrt{3}$$

$x^6 = -1$

Some Important Values :

If $x + \frac{1}{x} = a$ then $x - \frac{1}{x} = ?$

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

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

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

$$\left(x - \frac{1}{x}\right)^2 = a^2 - 4$$

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

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

$x + \frac{1}{x} = 4$ $\quad$ $x - \frac{1}{x} = \sqrt{12} = 2\sqrt{3}$

$x + \frac{1}{x} = 10$ $\quad$ $x - \frac{1}{x} = \sqrt{96} = \sqrt{16 \times 6} = 4\sqrt{6}$

Some Important Values :

If $x - \frac{1}{x} = a$ then $x + \frac{1}{x} = ?$

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

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

$$\left(x + \frac{1}{x}\right)^2 = a^2 + 4$$

$$\left(x + \frac{1}{x}\right) = \sqrt{a^2 + 4}$$

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

$x - \frac{1}{x} = 4\sqrt{6}$ $\quad$ $x + \frac{1}{x} = 10$

$x - \frac{1}{x} = 3$ $\quad$ $x + \frac{1}{x} = \sqrt{13}$

Some Important Values :

If $x + \frac{1}{x} = a$ then $x^2 + \frac{1}{x^2} = ?$

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

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

Some Important Values :

If $x - \frac{1}{x} = a$ then $x^2 + \frac{1}{x^2} = ?$

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

$x - \frac{1}{x} = 3 \quad x^2 + \frac{1}{x^2} = 11$

$x - \frac{1}{x} = 5 \quad = 27$

$x - \frac{1}{x} = 7 \quad = 51$

$x - \frac{1}{x} = 4 \quad = 18$

Some Important Values :

40-50 60

Algebra
Geo
Men
N.S
T.M
H.D
87

If $x + \frac{1}{x} = a$ then $x^2 - \frac{1}{x^2} = ?$

$\Rightarrow \left(x+\frac{1}{x}\right)\left(x-\frac{1}{x}\right)$

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

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

$\therefore$

Some Important Values :

If $x + \frac{1}{x} = a$ then $x^3 + \frac{1}{x^3} = ?$

$$x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right) = a^3$$

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

$$a^3 + b^3 = (a+b)^3 - 3ab(a+b)$$

$(a+b)$

$a \times b$

$$x + \frac{1}{x} = 3$$

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

$$= 27 - 9 = \underline{18}$$

Some Important Values :

If $x - \frac{1}{x} = a$ then $x^3 - \frac{1}{x^3} = ?$

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

$x - \frac{1}{x} = 4$

$$x^3 - \frac{1}{x^3} = 4^3 + 3 \times 4$$

$$= 64 + 12$$

$$= 76$$

Some Important Values :

If $x + \frac{1}{x} = a$ then $x^4 - \frac{1}{x^4} = ?$

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

1. If $x+\frac{1}{x}=4$,find the value of $x^2+\frac{1}{x^2}$? $=4^2-2=16-2=14$
2. If $x+\frac{1}{x}=5$,find the value of $x^2+\frac{1}{x^2}$? $=5^2-2=25-2=23$
3. If $x+\frac{1}{x}=3$,find the value of $x^2+\frac{1}{x^2}$? $=7$
4. If $x+\frac{1}{x}=1$,find the value of $x^2+\frac{1}{x^2}$? $=-1$
5. If $x+\frac{1}{x}=7$, find the value of $x^2+\frac{1}{x^2}$? 47

1. If $x + \frac{1}{x} = 8$, find the value of $x^2 + \frac{1}{x^2}$? 62

2. If $x + \frac{1}{x} = 9$, find the value of $x^2 + \frac{1}{x^2}$? 79

3. If $x + \frac{1}{x} = 27$, find the value of $x^2 + \frac{1}{x^2}$? 727

4. If $x + \frac{1}{x} = 25$, find the value of $x^2 + \frac{1}{x^2}$? 623

5. If $x + \frac{1}{x} = 23$, find the value of $x^2 + \frac{1}{x^2}$? 527

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

Hence, $x^3 + \frac{1}{x^3} = k^3 - 3k$

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

1. If $x + \frac{1}{x} = 3$, find the value of $x^3 + \frac{1}{x^3}$? $= 27 - 9 = 18$
2. If $x + \frac{1}{x} = 6$, find the value of $x^3 + \frac{1}{x^3}$? $= 216 - 18 = 198$
3. If $x + \frac{1}{x} = 4$, find the value of $x^3 + \frac{1}{x^3}$? $= 64 - 12 = 52$
4. If $x + \frac{1}{x} = 7$, find the value of $x^3 + \frac{1}{x^3}$? $= 343 - 21 = 322$

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

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

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

$x + \frac{1}{x} = 5$

$x^2 + \frac{1}{x^2} = 23$

$x^3 + \frac{1}{x^3} = 110$

$x^5 + \frac{1}{x^5} =$

$= 23 \times 110 - 5$

$= 2530 - 5$

$= 2525$

$x + \frac{1}{x} = 3$

$x^5 + \frac{1}{x^5} =$

$7 \times 18 - 3$

$= 126 - 3$

$= 123$

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

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

$$x + \frac{1}{x} = k$$ H/W

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

1. If $x + \frac{1}{x} = 5$,find the value of $x^5 + \frac{1}{x^5}$?
2. If $x + \frac{1}{x} = 6$,find the value of $x^5 + \frac{1}{x^5}$?
3. If $x + \frac{1}{x} = 10$,find the value of $x^5 + \frac{1}{x^5}$?

If $x + \frac{1}{x} = 1$,find the value of $x^5 + \frac{1}{x^5}$?

SQUARE FORMULA

- $(a + b)^2 = a^2 + b^2 + 2ab$
- $(a - b)^2 = a^2 + b^2 - 2ab$
- $(a + b)^2 = (a - b)^2 + 4ab$
- $(a - b)^2 = (a + b)^2 - 4ab$
- $(a^2 - ab + b^2)(a^2 + ab + b^2) = a^4 + a^2 b^2 + b^4$
- $(a + b)^2 - (a - b)^2 = 4ab$
- $a^2 - b^2 = (a + b)(a - b)$
- $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$

If $x + \frac{1}{x} = 3$, then find the value of $x^3 + 1/x^3$?

H/W

If $x + \frac{1}{x} = 5$, then find the value of $x^3 + 1/x^3$?

If $a^2 + b^2 - 5ab = 0$, then find the value of $\left(\frac{a}{b}\right)^2 + \left(\frac{b}{a}\right)^2$?

$\left(\frac{a}{b}\right)^2 + \left(\frac{b}{a}\right)^2$

$\frac{a}{b} = x$

$\frac{a^2}{ab} + \frac{b^2}{ab} = \frac{5ab}{ab}$

$\frac{a}{b} + \frac{b}{a} = 5$

$x + \frac{1}{x} = 5$

$x^2 + \frac{1}{x^2} = 23$ $\quad \left(\frac{a}{b}\right)^2 + \left(\frac{b}{a}\right)^2 = 23$

$(x-a)=\frac{1}{(x-b)}$ $(x-b)=\frac{1}{(x-a)}$

If $(x-a)(x-b)=1$,and $a-b+5=0$ then find the value of $(x-a)^3-\left(\frac{1}{x-a}\right)^3$?

$\Rightarrow (x-a)^3-(x-b)^3=(+5)^3+3\times1\times+5$

$=125+15$

$=140$

$a^3-b^3=(a+b)^3-3ab(a+b)$

$a^3-b^3=(a-b)^3+3ab(a-b)$

$(x-a)^3-(x-b)^3$

$\Rightarrow 5^3+3\times1\times5$

$=125+15$

$=140$

$-a+b-5=0$

$-a+b=5$

$a-b+5=0$

$\boxed{-a+b=5}$

$x-a-x+b$

$-a+b=5$

$a-b=-5$

$-a+b=5$

If $x^2 + x = 5$ then find the value of $(x+3)^3 + \left(\frac{1}{x+3}\right)^3$?

$x^2 + x = 5$

$x^2 = (5 - x)$

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

$\Rightarrow \frac{(x+3)^2 + 1}{(x+3)}$

$\Rightarrow \frac{x^2 + 9 + 6x + 1}{x+3}$

$\Rightarrow \frac{5 - x + 9 + 6x + 1}{x+3}$

$\Rightarrow \frac{5x + 15}{x+3}$ $\quad \frac{5(x+3)}{(x+3)} = 5$

$a^3 + b^3 = (a+b)^3 - 3ab(a+b)$

$= 5^3 - 3 \times 1 \times 5$

$= 125 - 15$

$= 110$

If $x^2 + 4x = 4$ then find the value of $(x+5)^3 + \left(\frac{1}{x+5}\right)^3$?

$x^2 = 4 - 4x$

$(x+5) + \frac{1}{(x+5)}$ $\Rightarrow$ $(6)^3 - 3 \times 6$

$\Rightarrow 216 - 18$

$\Rightarrow 198$

$\frac{x^2 + 25 + 10x + 1}{(x+5)}$

$\frac{4 - 4x + 25 + 10x + 1}{(x+5)}$

$\Rightarrow \frac{6x + 30}{(x+5)} \Rightarrow \frac{6(x+5)}{(x+5)}$

$\Rightarrow 6$

$a^3 + b^3 = (a+b)^3 - 3ab(a+b)$

$a^3 + b^3 = (a-b)^3 + 3ab(a-b)$

$x^2 = 4 - 2x$

If $x^2 + 2x = 4$ then find the value of $(x+3)^3 - \left(\frac{1}{x+3}\right)^3$?

$a^3 - b^3 = (a-b)^3 + 3ab(a-b)$

$(x+3) - \frac{1}{(x+3)} = 4$

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

$\Rightarrow \frac{x^2 + 9 + 6x - 1}{x+3}$

$\Rightarrow \frac{4 - 2x + 9 + 6x - 1}{x+3}$

$\Rightarrow \frac{4x+12}{x+3} \Rightarrow \frac{4(x+3)}{(x+3)} = 4$

$= 4^3 + 3 \times 4$

$= 64 + 12$

$= 76$

If $x^2 + x = 11$ then find the value of $(x+3)^3 - \left(\frac{5}{x+3}\right)^3$?

$a^3 - b^3 = (a-b)^3 + 3ab(a-b)$

$x^2 = 11 - x$

$\Rightarrow (x+3) - \frac{5}{(x+3)}$

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

$= \frac{x^2 + 9 + 6x - 5}{x+3}$

$= \frac{11 - x + 9 + 6x - 5}{x+3}$

$= \frac{5x + 15}{x+3} = \frac{5(x+3)}{(x+3)}$

$= 5$

$= 5^3 + 3 \times 5 \times 5$

$= 125 + 75$

$= 125 + 75$

$= 200$

$(x+3) \times \frac{5}{(x+3)}$

If $x^2 - 16x + 59 = 0$ then find the value of $(x-6)^2 + \left(\frac{1}{x-6}\right)^2$?

$a^2+b^2 = (a+b)^2 - 2ab$

$a^2+b^2 = (a-b)^2 + 2ab$

$(x-6) - \frac{1}{(x-6)}$

$= \frac{x^2+36-12x+1}{x-6}$

$= \frac{16x-59+36-12x+1}{x-6}$

$= \frac{4x-24}{x-6}$

$= \frac{4(x-6)}{(x-6)} = 4$

59
35
24

$= (4)^2 + 2 \times 1$

$= 16+2 = 18$

If $x^2 - 12x + 33 = 0$ then find the value of $(x-4)^2 + \left(\frac{1}{x-4}\right)^2$?

$(a+b)^2$

$x-4+\frac{1}{x-4}$

$\Rightarrow \frac{x^2+16-8x+1}{x-4}$

$\frac{12x-33+16-8x+1}{x-4}$

$\Rightarrow \frac{4x-16}{x-4}$ $\quad \frac{4(x-4)}{(x-4)}$

$= 4$

$= 16 - 2\times 12 \quad 14$

Basic Formula:

- $(a+b)^3 = a^3 + b^3 + 3ab(a+b)$
- $(a-b)^3 = a^3 - b^3 - 3ab(a-b)$

If $P=\frac{X+Y}{X-Y}$ and $Q=\frac{X-Y}{X+Y}$ than what is the value of $P+Q$

$$P+Q=\frac{x+y}{x-y}+\frac{x-y}{x+y}$$

$$=\frac{(x+y)^2+(x-y)^2}{x^2-y^2}$$

$$=\frac{2[x^2+y^2]}{(x^2-y^2]}$$

$$P=\frac{\sqrt{2}+1}{\sqrt{2}-1}$$

$$Q=\frac{\sqrt{2}-1}{\sqrt{2}+1}$$

$$P+Q=\frac{2(2+1)}{2-1}=\frac{2\times 3}{1}=6$$

Find $\frac{\sqrt{3}+1}{\sqrt{3}-1}+\frac{\sqrt{3}-1}{\sqrt{3}+1}$?

$$= 2\frac{\left[(\sqrt{3})^2+(1)^2\right]}{\left[(\sqrt{3})^2-(1)^2\right]}$$

$$= 2\frac{[3+1]}{[3-1]} = \frac{\cancel{2}\times 4}{\cancel{2}}$$

$$= 4$$

Find $\left(\frac{\sqrt{3}+1}{\sqrt{3}-1}\right)^3 + \left(\frac{\sqrt{3}-1}{\sqrt{3}+1}\right)^3$?

$a^3+b^3 \Rightarrow (a+b)^3 - 3ab(a+b)$

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

$= \frac{2[4]}{2}$

$= 4^2$

$\left(\frac{\sqrt{3}+1}{\sqrt{3}-1}\right) \times \left(\frac{\sqrt{3}-1}{\sqrt{3}+1}\right)$

1

$\Rightarrow 4^3 - 3 \times 1 \times 4$

$= 64 - 12$

$= 52$

If $x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$ and $y = \frac{2-\sqrt{3}}{2+\sqrt{3}}$ then find the value of $\frac{x}{y} + \frac{y}{x}$?

$= \frac{x^2+y^2}{xy}$

$x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$

$y = \frac{2-\sqrt{3}}{2+\sqrt{3}}$

$x \times y = 1$

$= \frac{194}{1}$

$= 194$

$x^2+y^2 = (x+y)^2 - 2xy$

$x+y = 2\frac{[4+3]}{[4-3]}$

$x+y = 14$

$x^2+y^2 = 196-2$

$= 194$

If $x = \frac{\sqrt{13}+\sqrt{11}}{\sqrt{13}-\sqrt{11}}$ and $y = \frac{\sqrt{13}-\sqrt{11}}{\sqrt{13}+\sqrt{11}}$ then find the value of $4x^2 - 2xy + 4y^2$?

$x+y = 2\frac{[13+11]}{[13-11]}$

$= 2\frac{[24]}{2}$

$x+y = 24$

$(x^2+y^2) = (24)^2 - 2\times 1$

$= 576 - 2$

$= 574$

$= 4(x^2+y^2) - 2xy$

$= 4\times 574 - 2\times 1$

$= 2296 - 2$

$= 2294$

$x^2+y^2 = (x+y)^2 - 2xy$

If $x = \frac{\sqrt{5}+\sqrt{1}}{\sqrt{5}-\sqrt{1}}$ and y$= \frac{\sqrt{5}-\sqrt{1}}{\sqrt{5}+\sqrt{1}}$ then find the value of $\frac{x^2-xy+y^2}{x^2+xy+y^2}$?

H|W

If $a = \frac{\sqrt{3}+\sqrt{1}}{\sqrt{3}-\sqrt{1}}$ and b= $\frac{\sqrt{3}-\sqrt{1}}{\sqrt{3}+\sqrt{1}}$ then find the value of $\frac{a}{b} + \frac{b}{a}$?

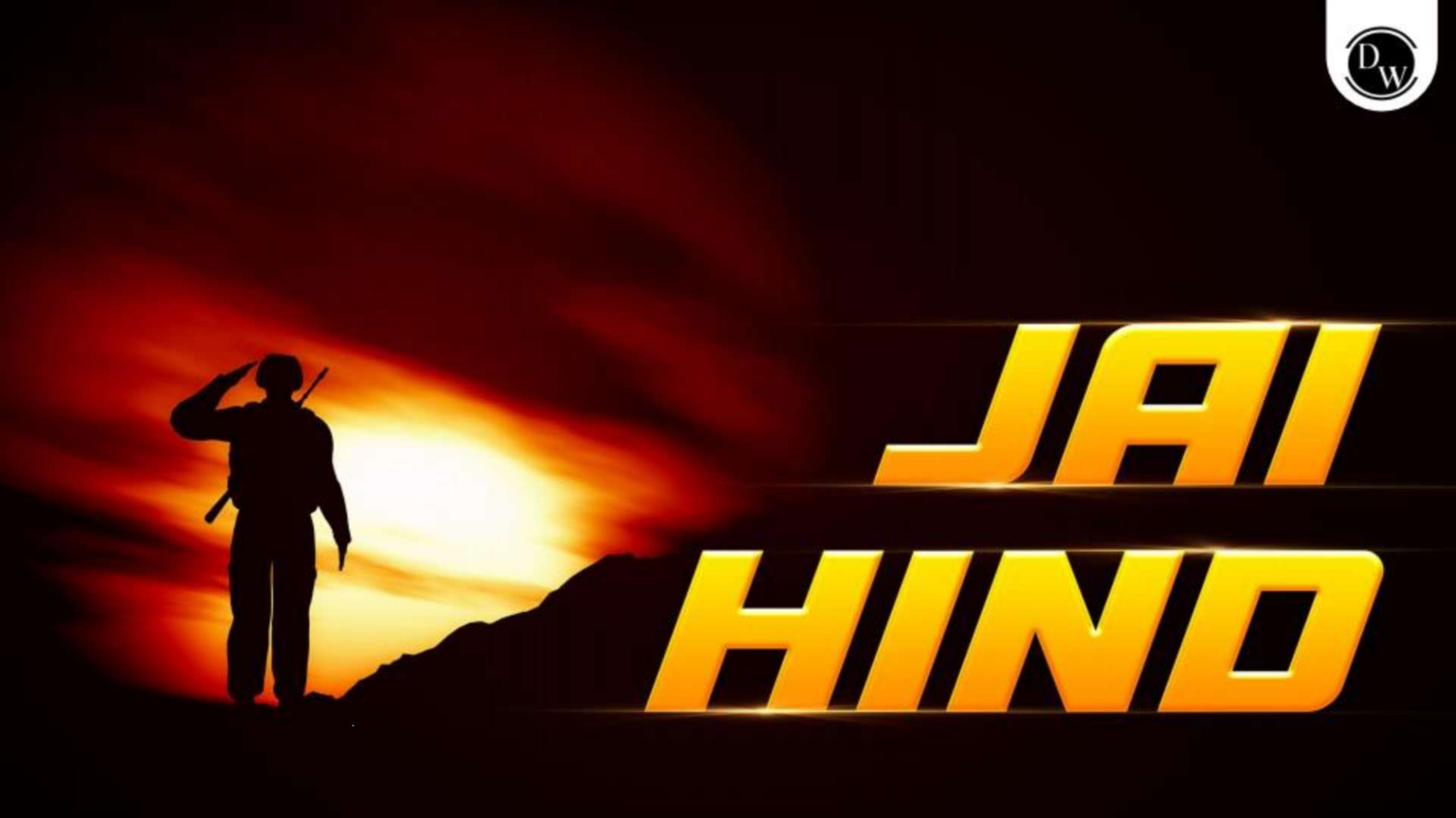
H/W

If $a = \frac{\sqrt{3}+\sqrt{1}}{\sqrt{3}-\sqrt{1}}$ and b= $\frac{\sqrt{3}-\sqrt{1}}{\sqrt{3}+\sqrt{1}}$ then find the value of $\frac{a^2}{b} + \frac{b^2}{a}$?

H/W

If $a = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and b= $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ then find the value of $a^2 + b^2 - 3ab$?

H/W


JAI
HIND