GAT-HAT-Quantitative

Formula Type Questions

If $a-b=7$, $a+b=13$, what is the value of a^2-b^2?

91

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

$= (7)(13)$

$= 91$

If $x^2+y^2=36$, $(x+y)^2=64$, what is the value of xy?

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

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

$$64 = 36 + 2xy$$

$$64-36 = 2xy$$

$$28 = 2xy$$

$$\Rightarrow xy = 14$$

What is the sum of reciprocal of x^2+y^2?

$$\Rightarrow \frac{1}{x^2} + \frac{1}{y^2}$$

$$\frac{y^2+x^2}{x^2y^2} \longrightarrow \frac{x^2+y^2}{x^2y^2}$$

x=99, find the value of $4x^3-x/(2x+1)(6x-3)$ 33

$$Q:\ \frac{4x3-x}{(2x+1)(6x-3)} = \frac{x(4x2-1)}{(2x+1)3(2x-1)}$$

$$= \frac{x\cancel{(2x-1)}\cancel{(2x+1)}}{3\cancel{(2x+1)}\cancel{(2x-1)}} = \frac{x}{3} = \frac{99}{3}$$

$$= 33 \checkmark$$

X=994, find the value of $x^2+12x+36$

$$(x+6)^2$$

$$= (994+6)^2$$

$$= (1000)^2$$

$$= 1000,000$$

If $c^2+d^2=4$ and $(c-d)^2=2$, what is the value of cd?

$(c-d)^2 = c^2 + d^2 - 2cd$

$2 = 4 - 2cd$

$-2 = -2cd$

$cd = 1$

If $x^2-y^2=28$ and $x-y=8$, what is the average of x and y? → 1.75

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

$28 = 8\,(x+y)$

$x+y = \frac{28}{8} = 3.5$

$x+y = 3.5$

$\frac{x+y}{2} = \frac{3.5}{2}$

$= 1.75$

$(1/a + a)^2 - (1/a - a)^2 = ?$

$$\left(\frac{1}{a} + a\right)^2 - \left(\frac{1}{a} - a\right)^2$$

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

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

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

If $(1/a + a)^2 = 100$, what is the value of $1/a^2 + a^2$?

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

$$100 = \frac{1}{a^2} + a^2 + 2$$

$$100 - 2 = \frac{1}{a^2} + \cdot$$

If $(1/a + a)^2 = 100$, what is the value of $1/a^2 + a^2$?

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

$$100 = \frac{1}{a^2} + a^2 + 2$$

$$\frac{1}{a^2} + a^2 = 98$$

11 Reading comprehension paragraphs and their solution from ...

PAST PAPER Comprehension Paragraphs