



Quadratic Equations Ex 8.7 Q16

**Answer :**

Let one numbers be  $x$  then other  $(x + 4)$ .

Then according to question

$$\frac{1}{x} - \frac{1}{(x+4)} = \frac{4}{21}$$

$$\frac{\cancel{x} + 4 - \cancel{x}}{x(x+4)} = \frac{4}{21}$$

$$\frac{4}{(x^2 + 4x)} = \frac{4}{21}$$

By cross multiplication

$$4x^2 + 16x = 84$$

$$4x^2 + 16x - 84 = 0$$

$$4(x^2 + 4x - 21) = 0$$

$$(x^2 + 4x - 21) = 0$$

$$x^2 + 7x - 3x - 21 = 0$$

$$x(x + 7) - 3(x + 7) = 0$$

$$(x + 7)(x - 3) = 0$$

$$(x + 7) = 0$$

$$x = -7$$

Or

$$(x-3)=0$$

$$x=3$$

Since,  $x$  being a number,

Therefore,

When  $x = -7$  then

$$x+4 = -7+4$$

$$= -3$$

And when  $x = 3$  then

$$x+4 = 3+4$$

$$= 7$$

Thus, two consecutive number be either  $7, 3$  or  $-7, -3$

Quadratic Equations Ex 8.7 Q17

**Answer :**

Let one natural number be  $x$  and other  $(x-3)$ .

Then according to question

$$(x)^2 + (x-3)^2 = 117$$

$$x^2 + x^2 - 6x + 9 = 117$$

$$2x^2 - 6x + 9 - 117 = 0$$

$$2x^2 - 6x - 108 = 0$$

$$2x^2 - 6x - 108 = 0$$

$$2(x^2 - 3x - 54) = 0$$

$$(x^2 - 3x - 54) = 0$$

$$x^2 - 9x + 6x - 54 = 0$$

$$x(x-9) + 6(x-9) = 0$$

$$(x-9)(x+6) = 0$$

$$(x-9) = 0$$

$$x = 9$$

or

$$(x+6)=0$$

$$x=-6$$

Since,  $x$  being a natural number, so  $x$  cannot be negative.

Therefore,

When  $x=9$  then even integer

$$x-3=9-3$$

$$=6$$

Thus, two natural number be  $\boxed{9,6}$

Quadratic Equations Ex 8.7 Q18

**Answer :**

Let three consecutive integer be  $x$ ,  $(x+1)$  and  $(x+2)$

Then according to question

$$x^2 + (x+1)^2 + (x+2)^2 = 149$$

$$x^2 + x^2 + 2x + 1 + x^2 + 4x + 4 = 149$$

$$3x^2 + 6x + 5 - 149 = 0$$

$$3x^2 + 6x - 144 = 0$$

$$3x^2 + 6x - 144 = 0$$

$$3(x^2 + 2x - 48) = 0$$

$$x^2 + 2x - 48 = 0$$

$$x^2 + 8x - 6x - 48 = 0$$

$$x(x+8) - 6(x+8) = 0$$

$$(x+8)(x-6) = 0$$

$$(x+8) = 0$$

$$x = -8$$

Or

$$(x-6) = 0$$

$$x = 6$$

Since,  $x$  being a positive number, so  $x$  cannot be negative.

Therefore,

When  $x=6$  then other positive integer

$$x+1=6+1$$

$$=7$$

And

$$x+2=6+2$$

$$=8$$

Thus, three consecutive positive integer be  $\boxed{6,7,8}$

\*\*\*\*\* END \*\*\*\*\*

