



Quadratic Equations Ex 8.7 Q13

**Answer :**

Let the successive integer multiples of 5 be  $5x$ , and  $5(x+1)$

Then according to question

$$5x \times 5(x+1) = 300$$

$$25(x^2 + x) = 300$$

$$x^2 + x = 12$$

$$x^2 + x - 12 = 0$$

$$x^2 - 3x + 4x - 12 = 0$$

$$x(x-3) + 4(x-3) = 0$$

$$(x-3)(x+4) = 0$$

Therefore,

$$(x-3) = 0$$

$$x = 3$$

Or

$$(x+4) = 0$$

$$x = -4$$

When  $x = 3$  then integer

$$5x = 5 \times 3$$

$$= 15$$

$$5(x+1) = 5(3+1)$$

$$= 5 \times 4$$

$$= 20$$

And when  $x = -4$  then integer

$$5x = 5 \times -4$$

$$= -20$$

$$5(x+1) = 5(-4+1)$$

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

$$= -15$$

Thus, three consecutive positive integer be  $15, 20$  or  $-20, -15$

Quadratic Equations Ex 8.7 Q14

**Answer :**

Let the numbers be integers. One of the numbers be  $x$ . So, the other will be  $(2x-3)$ .

Then according to question,

$$x^2 + (2x-3)^2 = 233$$

$$x^2 + 4x^2 - 12x + 9 = 233$$

$$5x^2 - 12x + 9 - 233 = 0$$

$$5x^2 - 12x - 224 = 0$$

$$5x^2 - 40x + 28x - 224 = 0$$

$$5x(x-8) + 28(x-8) = 0$$

$$(x-8)(5x+28) = 0$$

$$(x-8) = 0$$

$$x = 8$$

Or

$$(5x+28) = 0$$

$$x = \frac{-28}{5}$$

Since, we have assumed the numbers to be integers, so  $x$  cannot be a rational number/fraction.

Therefore, for  $x = 8$

Other number =

$$(2x-3) = 2 \times 8 - 3$$

$$= 16 - 3$$

$$= 13$$

Thus, whole numbers be  $\boxed{8, 13}$ .

Quadratic Equations Ex 8.7 Q15

**Answer :**

Let two consecutive even integer be  $2x$  and other  $(2x+2)$

Then according to question

$$(2x)^2 + (2x+2)^2 = 340$$

$$4x^2 + 4x^2 + 8x + 4 = 340$$

$$8x^2 + 8x = 340 - 4$$

$$8x^2 + 8x - 336 = 0$$

$$8x^2 + 8x - 336 = 0$$

$$8(x^2 + x - 42) = 0$$

$$(x^2 + x - 42) = 0$$

$$x^2 + 7x - 6x - 42 = 0$$

$$x(x+7) - 6(x+7) = 0$$

$$(x+7)(x-6) = 0$$

$$(x+7) = 0$$

$$x = -7$$

or

$$(x - 6) = 0$$

$$x = 6$$

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

Therefore,

When  $x = 6$  then even integer

$$2x = 2 \times 6$$

$$= 12$$

And

$$2x + 2 = 2 \times 6 + 2$$

$$= 14$$

Thus, two consecutive odd positive integer be 12,14

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