



Quadratic Equations Ex 8.8 Q10

**Answer :**

Let the original speed of train be  $x$  km/hr. Then,

Increased speed of the train =  $(x + 5)$  km/hr

Time taken by the train under usual speed to cover 360 km =  $\frac{360}{x}$  hr

Time taken by the train under increased speed to cover 360 km =  $\frac{360}{(x + 5)}$  hr

Therefore,

$$\frac{360}{x} - \frac{360}{(x + 5)} = 1$$

$$\frac{\{360(x + 5) - 360x\}}{x(x + 5)} = 1$$

$$\frac{360x + 1800 - 360x}{x^2 + 5x} = 1$$

$$\frac{\cancel{360x} + 1800 - \cancel{360x}}{x^2 + 5x} = 1$$

$$1800 = x^2 + 5x$$

$$x^2 + 5x - 1800 = 0$$

$$x^2 + 5x - 1800 = 0$$

$$x^2 - 40x + 45x - 1800 = 0$$

$$x(x - 40) + 45(x - 40) = 0$$

$$(x - 40)(x + 45) = 0$$

So, either

$$(x - 40) = 0$$

$$x = 40$$

Or

$$(x + 45) = 0$$

$$x = -45$$

But, the speed of the train can never be negative.

Hence, the original speed of train is  $x = 40$  km/hr

Quadratic Equations Ex 8.8 Q11

**Answer :**

Let the speed of the passenger train be  $x$  km/hr. Then,

Speed of the express train =  $(x + 11)$  km/hr

Time taken by the passenger train to cover 132 km between Mysore to Bangalore =  $\frac{132}{x}$  hr

Time taken by the express train to cover 132 km between Mysore to Bangalore =  $\frac{132}{(x + 11)}$  hr

Therefore,

$$\frac{132}{x} - \frac{132}{(x + 11)} = 1$$

$$\frac{\{132(x + 11) - 132x\}}{x(x + 11)} = 1$$

$$\frac{132x + 1452 - 132x}{x^2 + 11x} = 1$$

$$\frac{1452}{x^2 + 11x} = 1$$

$$1452 = x^2 + 11x$$

$$x^2 + 11x - 1452 = 0$$

$$x^2 + 11x - 1452 = 0$$

$$x^2 - 33x + 44x - 1452 = 0$$

$$x(x - 33) + 44(x - 33) = 0$$

$$(x - 33)(x + 44) = 0$$

So, either

$$(x - 33) = 0$$

$$x = 33$$

Or

$$(x + 44) = 0$$

$$x = -44$$

But, the speed of the train can never be negative.

Thus, when  $x = 33$  then speed of express train

$$= (x + 11)$$

$$= (33 + 11)$$

$$= 44$$

Hence, the speed of the passenger train is  $x = 33$  km/hr

and the speed of the express train is  $x = 44$  km/hr respectively.

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