Pair of Linear Equations in Two varibles Ex 3.11 Q11

**Answer :**

We have to prove that the triangle is right

Given $\angle A = x°, \angle B = 3x°$ and $\angle C = y°$

Sum of three angles in triangle are $\angle A + \angle B + \angle c = 180°$

$$\angle A + \angle B + \angle c = 180°$$

$$x + 3x + y = 180$$

$$4x + y = 180 \cdots (i)$$

By solving $4x + y = 180$ with $3y - 5x = 30$ we get,

$$4x + y = 180$$

$$-5x + 3y = 30 \cdots (ii)$$

Multiplying equation $(i)$ by 3 we get

$$12x + 3y = 540 \cdots (iii)$$

Subtracting equation $(ii)$ from $(iii)$

$$12x + 3y = 540$$

$$+5x - 3y = -30$$

$$17x = 510$$

$$x = \frac{510}{17}$$

$$x = 30°$$

Substituting $x = 30°$ in equation $(i)$ we get

$$4x + y = 180$$

$$4 \times 30 + y = 180$$

$$120 + y = 180$$

$$y = 180 - 120$$

$$y = 60°$$

Angles $\angle A, \angle B$ and $\angle C$ are

$$\angle A = x°$$

$$= 30°$$

$$\angle B = 3x°$$

$$= 3 \times 30°$$

$$= 90°$$

$$\angle C = y°$$

$$= 60°$$

A right angled triangle is a triangle in which one side should has a right angle that is $90°$ in it.

Hence, $\angle B = 90°$ The triangle ABC is right angled

Pair of Linear Equations in Two varibles Ex 3.11 Q12

**Answer :**

Let the fixed charges of car be $Rs.x$ per km and the running charges be $Rs.y$ km/hr

According to the given condition we have

$$x+12y=89 \cdots(i)$$

$$x+20y=145 \cdots(ii)$$

$$\begin{array}{r} x+12y=89 \\ x+20y=145 \\ \hline -8y=-56 \end{array}$$

$$y=\frac{\cancel{-56}}{\cancel{-8}}$$

$$y=7$$

Putting $y=7$ in equation $(i)$ we get

$$x+12y=89$$

$$x+12\times 7=89$$

$$x+84=89$$

$$x=89-84$$

$$x=5$$

Therefore, Total charges for travelling distance of $30$ km

$$=x+30y$$

$$=5+30\times 7$$

$$=5+210$$

= Rs $215$

Hence, A person have to pay $\boxed{\text{Rs. } 215}$ for travelling a distance of $30$ km.

********** END **********