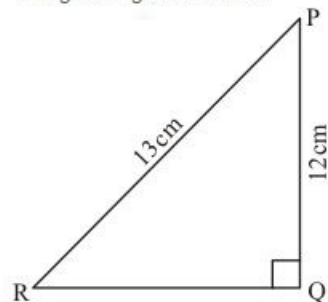




Trigonometric Ratios Ex 5.1 Q3

Answer :

The given figure is below:



To Find:

$\tan P, \cot R$

In the given right angled ΔPQR , length of side QR is unknown.

Therefore, to find length of side QR we use Pythagoras Theorem

Hence, by applying Pythagoras theorem in ΔPQR ,

We get,

$$PR^2 = PQ^2 + QR^2$$

Now, we substitute the length of given side PR and PQ in the above equation

$$13^2 = 12^2 + QR^2$$

$$QR^2 = 13^2 - 12^2$$

$$QR^2 = 169 - 144$$

$$QR^2 = 25$$

$$QR = \sqrt{25}$$

$$QR = 5$$

By definition, we know that

$$\tan P = \frac{\text{Perpendicular side opposite to } \angle P}{\text{Base side adjacent to } \angle P}$$

$$\tan P = \frac{QR}{PQ}$$

$$\tan P = \frac{5}{12} \dots (1)$$

Also, by definition, we know that

$$\cot R = \frac{\text{Base side adjacent to } \angle R}{\text{Perpendicular side opposite to } \angle R}$$

$$\cot R = \frac{QR}{PQ}$$

$$\cot R = \frac{5}{12} \dots (2)$$

Comparing equation (1) and (2), we come to know that R.H.S of both the equation are equal

Therefore, L.H.S of both the equation are also equal

$$\tan P = \cot R$$

Answer:

$$\text{Yes, } \tan P = \cot R = \frac{5}{12}$$

Trigonometric Ratios Ex 5.1 Q4

Answer :

Given: $\sin A = \frac{9}{41}$ (1)

To Find: $\cos A, \tan A$

By definition,

$$\sin A = \frac{\text{Perpendicular side opposite to } \angle A}{\text{Hypotenuse}} \dots\dots (2)$$

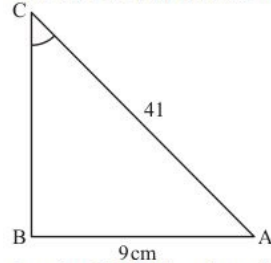
By Comparing (1) and (2)

We get,

Perpendicular side = 9 and

Hypotenuse = 41

Now using the perpendicular side and hypotenuse we can construct $\triangle ABC$ as shown below



Length of side AB is unknown in right angled $\triangle ABC$.

To find length of side AB, we use Pythagoras theorem.

Therefore, by applying Pythagoras theorem in $\triangle ABC$,

We get,

$$AC^2 = AB^2 + BC^2$$

$$41^2 = AB^2 + 9^2$$

$$AB^2 = 41^2 - 9^2$$

$$AB^2 = 1681 - 81$$

$$AB^2 = 1600$$

$$AB = \sqrt{1600}$$

$$AB = 40$$

Hence, length of side AB = 40

Now,

By definition,

$$\cos A = \frac{\text{Base side adjacent to } \angle A}{\text{Hypotenuse}}$$

$$\cos A = \frac{AB}{AC}$$

$$\cos A = \frac{40}{41}$$

Now,

By definition,

$$\tan A = \frac{\text{Perpendicular side opposite to } \angle A}{\text{Base side adjacent to } \angle A}$$

$$\tan A = \frac{BC}{AB}$$

$$\tan A = \frac{9}{40}$$

$$\text{Answer: } \cos A = \frac{40}{41} \text{ and } \tan A = \frac{9}{40}$$

***** END *****