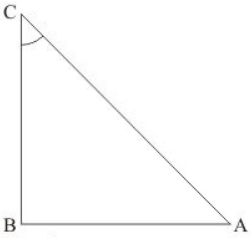


Therefore,

By Pythagoras theorem,

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

Now we substitute the value of base side (*AB*) and hypotenuse (*AC*) and get the perpendicular side (*BC*)

$13^2 = 5^2 + BC^2$

$BC^2 = 13^2 - 5^2$

$BC^2 = 169 - 25$

$BC^2 = 144$

$BC = \sqrt{144}$

$BC = 12$

Hence, Perpendicular side = 12

Now, $\sin\theta = \frac{\text{Perpendicular}}{\text{Hypotenuse}}$

Therefore,

$$\sin\theta = \frac{12}{13}$$

Now, $\operatorname{cosec}\theta = \frac{1}{\sin\theta}$

Therefore,

$$\operatorname{cosec}\theta = \frac{\text{Hypotenuse}}{\text{Perpendicular}}$$

$$\operatorname{cosec}\theta = \frac{13}{12}$$

Now, $\cos\theta = \frac{1}{\sec\theta}$

Therefore,

$$\cos\theta = \frac{\text{Base}}{\text{Hypotenuse}}$$

$$\cos\theta = \frac{5}{13}$$

Now, $\tan\theta = \frac{\text{Perpendicular}}{\text{Base}}$

Therefore,

$$\tan\theta = \frac{12}{5}$$

Now, $\cot\theta = \frac{1}{\tan\theta}$

Therefore,

$$\cot\theta = \frac{\text{Base}}{\text{Perpendicular}}$$

$$\cot\theta = \frac{5}{12}$$

(xi) Given:

$$\operatorname{cosec}\theta = \sqrt{10}$$

$$\operatorname{cosec}\theta = \frac{\sqrt{10}}{1} \quad \ldots\ldots (1)$$

By definition,

$$\operatorname{cosec}\theta = \frac{1}{\sin\theta}$$

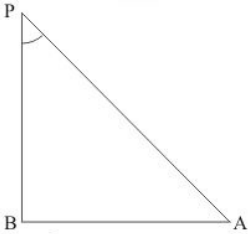
$$\operatorname{cosec}\theta = \frac{\text{Hypotenuse}}{\text{Perpendicular}} \quad \ldots\ldots (2)$$

By Comparing (1) and (2)

We get,

Perpendicular side = 1 and

Hypotenuse = $\sqrt{10}$



Therefore,

By Pythagoras theorem,

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

Now we substitute the value of perpendicular side (BC) and hypotenuse (AC) and get the base side (AB)

$$\left(\sqrt{10}\right)^2 = AB^2 + 1^2$$

$$AB^2 = \left(\sqrt{10}\right)^2 - 1^2$$

$$AB^2 = 10 - 1$$

$$AB^2 = 9$$

$$AB = \sqrt{9}$$

$$AB = 3$$

Hence, Base side = 3

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