



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

Therefore,

$$\sin \theta = \frac{1}{\sqrt{10}}$$

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

Therefore,

$$\cos \theta = \frac{3}{\sqrt{10}}$$

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

Therefore,

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

$$\sec \theta = \frac{\sqrt{10}}{3}$$

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

Therefore,

$$\tan \theta = \frac{1}{3}$$

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

Therefore,

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

$$\cot \theta = \frac{3}{1}$$

$$\cot \theta = 3$$

(xii) Given: $\cos \theta = \frac{12}{15}$ (1)

By definition,

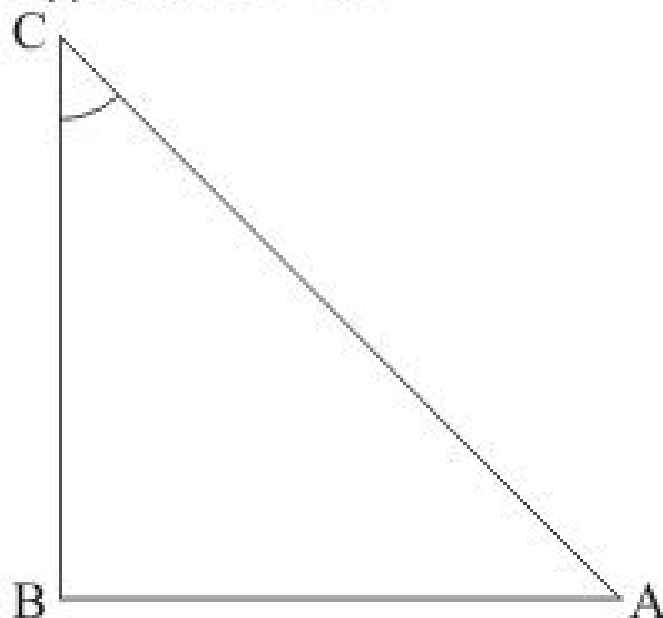
$$\cos \theta = \frac{\text{Base}}{\text{Hypotenuse}} \text{ (2)}$$

By Comparing (1) and (2)

We get,

Base = 12 and

Hypotenuse = 15



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)

$$15^2 = 12^2 + BC^2$$

$$BC^2 = 15^2 - 12^2$$

$$BC^2 = 225 - 144$$

$$BC^2 = 81$$

$$BC = \sqrt{81}$$

$$BC = 9$$

Hence, Perpendicular side = 9

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

Therefore,

$$\sin \theta = \frac{9}{15}$$

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

Therefore,

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

$$\operatorname{cosec} \theta = \frac{15}{9}$$

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

Therefore,

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

$$\sec \theta = \frac{15}{12}$$

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

Therefore,

$$\tan \theta = \frac{9}{12}$$

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

Therefore,

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

$$\cot \theta = \frac{12}{9}$$

***** END *****