Therefore,

$$\sec\theta = \frac{2}{1}$$

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

Therefore,

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

Now, $\cot\theta = \dfrac{\text{Base}}{\text{Perpendicular}}$

Therefore,

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

(vii) Given: $\cos\theta = \dfrac{7}{25}$ ......(1)
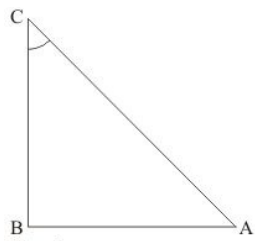
By definition,

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

By Comparing (1) and (2)

We get,

Base = 7 and

Hypotenuse = 25

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*)

$$25^2 = 7^2 + BC^2$$

$$BC^2 = 25^2 - 7^2$$

$$BC^2 = 625 - 49$$

$$BC^2 = 576$$

$$BC = \sqrt{576}$$

$$BC = 24$$

Hence, Perpendicular side = 24

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

Therefore,

$$\sin \theta = \frac{24}{25}$$

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

Therefore,

$$\cos ec\theta = \frac{\text{Hypotenuse}}{\text{Perpendicular}}$$

$$\operatorname{cosec} \theta = \frac{25}{24}$$

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

Therefore,

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

$$\sec \theta = \frac{25}{7}$$

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

Therefore,

$$\tan \theta = \frac{24}{7}$$

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

Therefore,

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

$$\cot \theta = \frac{7}{24}$$

(viii) Given: $\tan \theta = \dfrac{8}{15}$ ........(1)
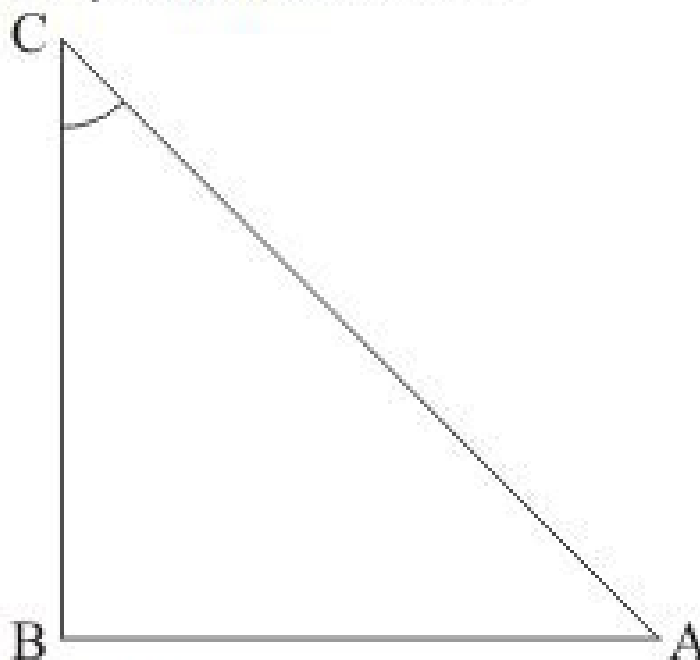
By definition,

$$\tan \theta = \frac{\text{Perpendicular}}{\text{Base}} \quad \text{.......(2)}$$

By Comparing (1) and (2)

We get,

Base = 15 and

Perpendicular side = 8



Therefore,

By Pythagoras theorem;

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

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

$AC^2 = 15^2 + 8^2$

$AC^2 = 225 + 64$

$AC^2 = 289$

$AC = \sqrt{289}$

$AC = 17$

Hence, Hypotenuse = 17

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

Therefore,

$\sin\theta = \dfrac{8}{17}$

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

Therefore,

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

$\operatorname{cosec}\theta = \dfrac{17}{8}$

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

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