Therefore,

$$\sec\theta = \frac{15}{2\sqrt{26}}$$

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

Therefore,

$$\tan\theta = \frac{11}{2\sqrt{26}}$$

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

Therefore,

$$\cot\theta = \frac{2\sqrt{26}}{11}$$

(v) Given: $\tan\alpha = \dfrac{5}{12}$ .....(1)

By definition,

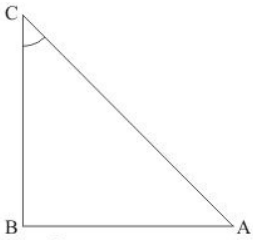
$$\tan\alpha = \frac{\text{Perpendicular}}{\text{Base}} \quad \text{..... (2)}$$

By Comparing (1) and (2)

We get,

Base = 12 and

Perpendicular side = 5



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*)

$AC^2 = 12^2 + 5^2$

$AC^2 = 144 + 25$

$AC^2 = 169$

$AC = 13$

Hence, Hypotenuse = 13

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

Therefore,

$\sin\alpha = \frac{5}{13}$

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

Therefore,

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

$$\operatorname{cosec}\alpha = \frac{13}{5}$$

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

Therefore,

$$\cos\alpha = \frac{12}{13}$$

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

Therefore,

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

$$\sec\alpha = \frac{13}{12}$$

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

Therefore,

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

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

(vi) Given: $\sin\theta = \frac{\sqrt{3}}{2}$ .....(1)

By definition,

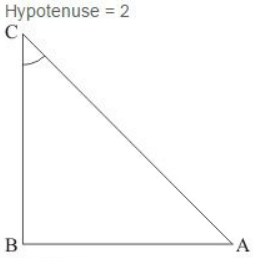
$\sin\theta = \frac{\text{Perpendiular}}{\text{Hypotenuse}}$ ..... (2)

By Comparing (1) and (2)

We get,

Perpendicular side = $\sqrt{3}$ and

Hypotenuse = 2



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*)

$$2^2 = AB^2 + \left(\sqrt{3}\right)^2$$

$$AB^2 = 2^2 - \left(\sqrt{3}\right)^2$$

$$AB^2 = 4 - 3$$

$$AB^2 = 1$$

$$AB = \sqrt{1}$$

$$AB = 1$$

Hence, Base = 1

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

Therefore,

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

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

Therefore,

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

$$\operatorname{cosec}\theta = \frac{2}{\sqrt{3}}$$

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

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