



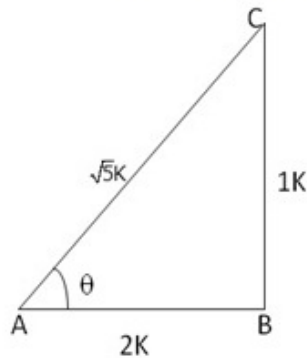
Question 4

Given: $\cot\theta = \frac{AB}{BC} = \frac{2}{1}$

Let $AB = 2k$ and $AC = 1k$,

Where k is positive

Let us draw a ΔABC in which $\angle B = 90^\circ$ and $\angle BAC = \theta$



By Pythagoras theorem, we have

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

$$(AC)^2 = (AB)^2 + (BC)^2 = [(2k)^2 + (1k)^2]$$

$$= (4k^2 + 1k^2) = 5k^2$$

$$\therefore AC = \sqrt{5k^2} = \sqrt{5}k$$

$$\therefore \sin\theta = \frac{BC}{AC} = \frac{1k}{\sqrt{5}k} = \frac{1}{\sqrt{5}}$$

$$\cos\theta = \frac{AB}{AC} = \frac{2k}{\sqrt{5}k} = \frac{2}{\sqrt{5}}$$

$$\tan\theta = \frac{1}{\cot\theta} = \frac{1}{2}; \cot\theta = 2 \text{ (given)}$$

$$\operatorname{cosec}\theta = \frac{1}{\sin\theta} = \sqrt{5}$$

$$\sec\theta = \frac{1}{\cos\theta} = \frac{\sqrt{5}}{2}$$

***** END *****