



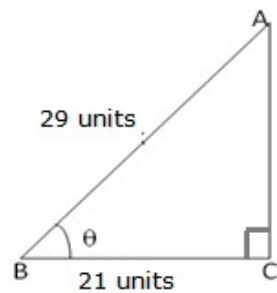
Question 3

Given: $\tan \theta = \frac{BC}{AB} = \frac{15}{8}$

Let $AB = 15k$ and $AC = 8k$,

Where k is positive

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



By Pythagoras theorem, we have

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

$$= [(8k)^2 + (15k)^2]$$

$$= 64k^2 + 225k^2$$

$$\therefore AC = \sqrt{289k^2} = 17k$$

$$\therefore \sin \theta = \frac{BC}{AC} = \frac{15k}{17k} = \frac{15}{17}$$

$$\cos \theta = \frac{AB}{AC} = \frac{8k}{17k} = \frac{8}{17}, \tan \theta = \frac{15}{8} \text{ (given)}$$

$$\operatorname{cosec} \theta = \frac{1}{\sin \theta} = \frac{17}{15}, \sec \theta = \frac{1}{\cos \theta} = \frac{17}{8}$$

$$\text{and } \cot \theta = \frac{1}{\tan \theta} = \frac{8}{15}$$

***** END *****