



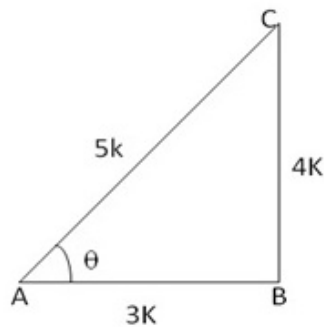
Question 7

Given:  $\tan \theta = \frac{BC}{AB} = \frac{4}{3}$

Let  $BC = 4k$  and  $AB = 3k$ ,

Where  $k$  is positive

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



By Pythagoras theorem, we get

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

$$\Rightarrow (AC)^2 = [(3k)^2 + (4k)^2]$$

$$\Rightarrow (AC)^2 = (9k^2 + 16k^2) = 25k^2$$

$$\therefore AC = \sqrt{25k^2} = 5k$$

$$\sin \theta = \frac{4k}{5k} = \frac{4}{5}$$

$$\cos \theta = \frac{3k}{5k} = \frac{3}{5}$$

$$\Rightarrow (\sin \theta + \cos \theta) = \left( \frac{4}{5} + \frac{3}{5} \right) = \frac{7}{5}$$

$$\text{Hence, } (\sin \theta + \cos \theta) = \frac{7}{5}$$

\*\*\*\*\* END \*\*\*\*\*