

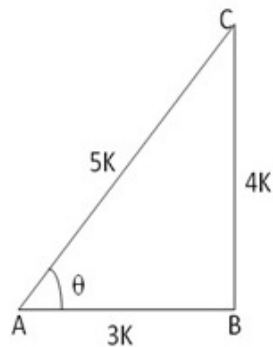


Question 12

Given: $3\tan\theta = 4$

$$\Rightarrow \tan\theta = \frac{4}{3}$$

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



By Pythagoras theorem, we have

$$\begin{aligned} AC^2 &= AB^2 + BC^2 \\ &= (4k)^2 + (3k)^2 \\ &= 16k^2 + 9k^2 = 25k^2 \\ AC &= 5k \end{aligned}$$

Now,

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

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

$$\begin{aligned} \text{L.H.S} &= \frac{4\cos\theta - \sin\theta}{2\cos\theta + \sin\theta} = \frac{4 \times \frac{3}{5} - \frac{4}{5}}{2 \times \frac{3}{5} + \frac{4}{5}} \\ &= \frac{12 - 4}{6 + 4} = \frac{8}{10} = \frac{4}{5} = \text{R.H.S.} \end{aligned}$$

***** END *****