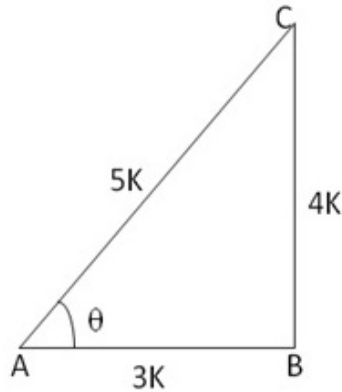Question 11

Given: $tan\theta = 0.6 = \frac{6}{10} = \frac{3}{5}$

Let us draw a ΔABC in which ∠B = 90⁰ and ∠BAC = θ

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

let AB = 3k

and AC = 5k,

where k is positive

By Pythagoras theorem, we have

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

$\Rightarrow (BC)^2 = (AC)^2 - (AB)^2$

$= \left[(5k)^2 - (3k)^2\right] = 16k^2$

$\Rightarrow (BC)^2 = 16k^2$

$\Rightarrow BC = 4k$

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

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

$\tan\theta = \frac{\sin\theta}{\cos\theta} = \left(\frac{4}{5} \times \frac{5}{3}\right) = \frac{4}{3}$

$\Rightarrow (5\sin\theta - 3\tan\theta) = \left(5 \times \frac{4}{5} - 3 \times \frac{4}{3}\right) = 0$

Hence, $(5\sin\theta - 3\tan\theta) = 0$

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