# Answer on Question #50327, Math, Trigonometry

Task:

A tree is leaning with a stick with an angle of 30 degree with the tree at a height of 7 m from the foot of the tree. What is the length of the stick? If the distance from the touch point of the stick to the tree is double of the distance from the foot of the tree to the foot of the stick, what is the length of the whole tree?

Solution:
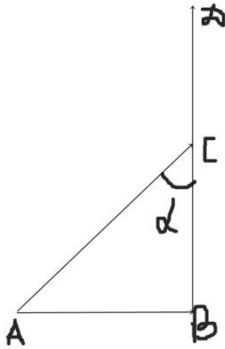
Let BD is tree and segment AC is stick as shown, so BC=7m and $\alpha = 30^0$.

We have right triangle ABC: $AC = \dfrac{BC}{\cos\alpha} = \dfrac{7}{\cos 30^0} = \dfrac{7}{\dfrac{\sqrt{3}}{2}} \approx 8.08m.$ - length of the stick.

$AB = AC\sin 30^0 \approx 4.04m.$

If the distance from the touch point of the stick to the tree is double of the distance from the foot of the tree to the foot of the stick, then DC=2AB=8.08m, so the length of the whole tree BD=8.08+7=15.08m.