A tree x m high the angle of elevation of its top from a point P on the ground is 23. from another point Q, 10 m from P and in line with P and the foot of the tree, the angle of elevation is 32. Find x.

Solution

As we get 2 rectangular triangles ABQ and APB with right angle B, in which AB = x,

BQ = x/tg32°, BP = x/tg23°, PQ = 10, and as BP = BQ + PQ, then:
x/tg23° = x/tg32° + 10
x(1/tg23° - 1/tg32°) = 10
x = 10/(1/tg23° - 1/tg32°) = 13.24 m
So, the height of the tree is 13.24 m.