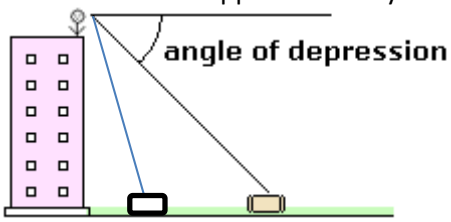
Answer on Question #42535, Math, Calculus

A person is watching a boat from the top of a lighthouse. The boat is approaching the lighthouse directly. When first noticed the angle of depression to the boat is 16°18'. When the boat stops, the angle of depression is 48°51'. The lighthouse is 200 feet tall. How far did the boat travel from when it was first noticed until it stopped? Round your answer to the hundredths place.



Calculate initial distance between boat and lighthouse.
We know one cathetus and angle of desperssion.

$$200 * tg(90° - 16°18') = 683.95m$$

Calculate distance between boat and lighthouse when it stopped.

$$200 * tg(90° - 48°51) = 174.78m$$

Find difference:
Length = 683.95 – 174.78 = 509.17
Answer: 509.17 meters