

Problem Statement

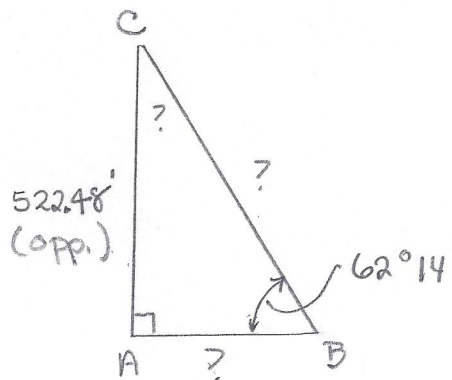
A right triangle has an angle that measures $62^\circ 14'$ with the side opposite measuring 522.48 ft. What is the length of the other 2 sides + the other angle.

Equations needed to solve problem

$$\tan \angle = \frac{\text{OPP}}{\text{adj}}$$

$$\sin \angle = \frac{\text{OPP}}{\text{hyp}}$$

Sketch of Problem



Solution

To DETERMINE SIDE AB:

$$\tan \angle B = \frac{\text{OPP}}{\text{adj}} = \frac{CA}{AB}$$

$$\tan 62^\circ 14' = \frac{522.48'}{AB}$$

$$AB = \frac{522.48'}{\tan 62^\circ 14'}$$

$$\underline{AB = 275.08 \text{ FT}}$$

To DETERMINE SIDE BC

$$\sin \angle B = \frac{AC}{BC} \Rightarrow BC = \frac{AC}{\sin \angle B}$$

$$BC = \frac{522.48}{\sin 62^\circ 14'}$$

$$\underline{BC = 590.47 \text{ FT}}$$

* TO CHECK THE SIDE CALCULATIONS

$$a^2 + b^2 = c^2$$

$$522.48^2 + 275.48^2 = c^2$$

$$\checkmark c = 590.47 \text{ FT}$$

To DETERMINE $\angle C$

$$\begin{array}{r} 90^\circ 00' \\ - 62^\circ 14' \\ \hline 27^\circ 46' \end{array}$$