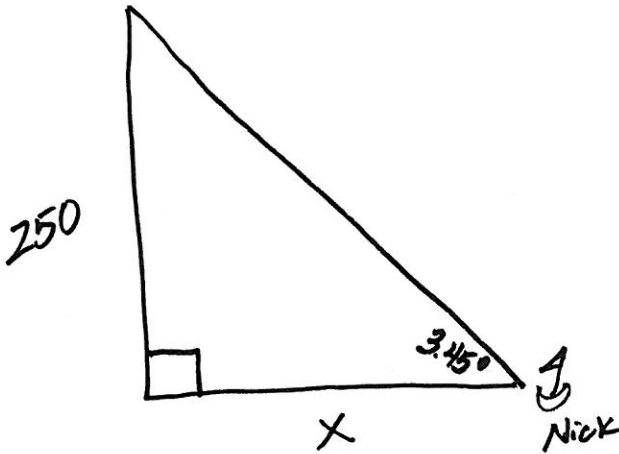


\*AAT

Chapter 8: Vector & Trig Review (IC)

Name: Key  
Date: \_\_\_\_\_ Period: \_\_\_\_\_

1. Nancy shines a light from a window of Rocky Rococco's beachside mansion on a cliff 250 feet above the water level. Nick Danger, in a ship off-shore, finds that the angle of elevation from his boat to Nancy and the light is  $3.45^\circ$ . How far is Nick Danger from the base of the cliff?

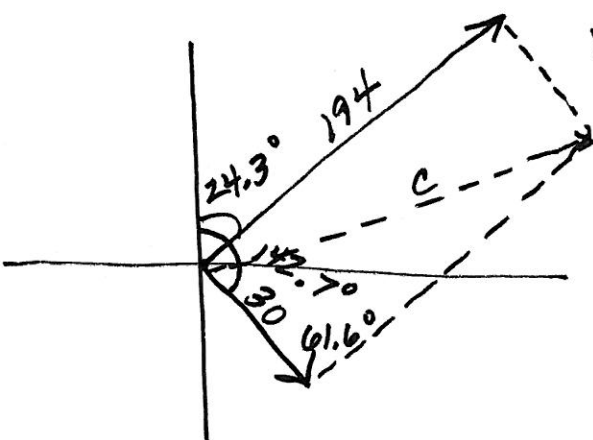


$$\tan 3.45^\circ = \frac{250}{x}$$

$$x = \frac{250}{\tan 3.45^\circ}$$

$$x = 4146.8 \text{ ft}$$

2. A plane is flying at 194 mph with a heading of  $24.3^\circ$  from due north. The wind is blowing a constant 30 mph at  $142.7^\circ$  from due north. Find the ground speed and true course of the plane.



magnitude      direction

$$C^2 = 30^2 + 194^2 - 2(30)(194)\cos 61.6$$

$$C = \underline{181.7} \leftarrow \text{ground speed}$$

$$\frac{\sin 61.6^\circ}{181.7} = \frac{\sin \theta}{30}$$

$$\theta \approx 8.35^\circ$$

$$\begin{array}{r} 142.7 \\ -24.3 \\ \hline 118.4 \end{array} \quad \begin{array}{r} 180 \\ -118.4 \\ \hline 61.6 \end{array}$$

$$\begin{array}{r} 24.3 \\ +8.35 \\ \hline 32.65^\circ \leftarrow \text{true course} \end{array}$$