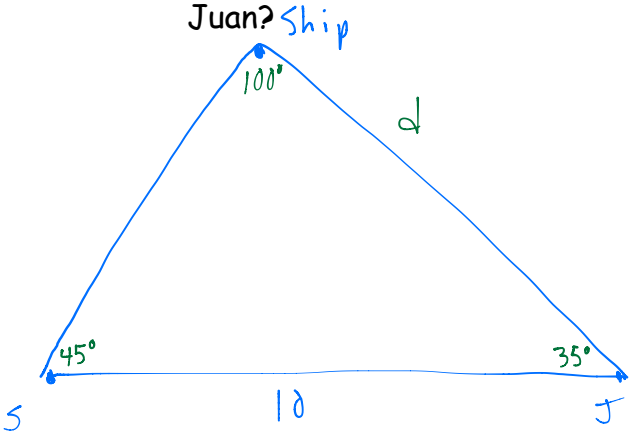
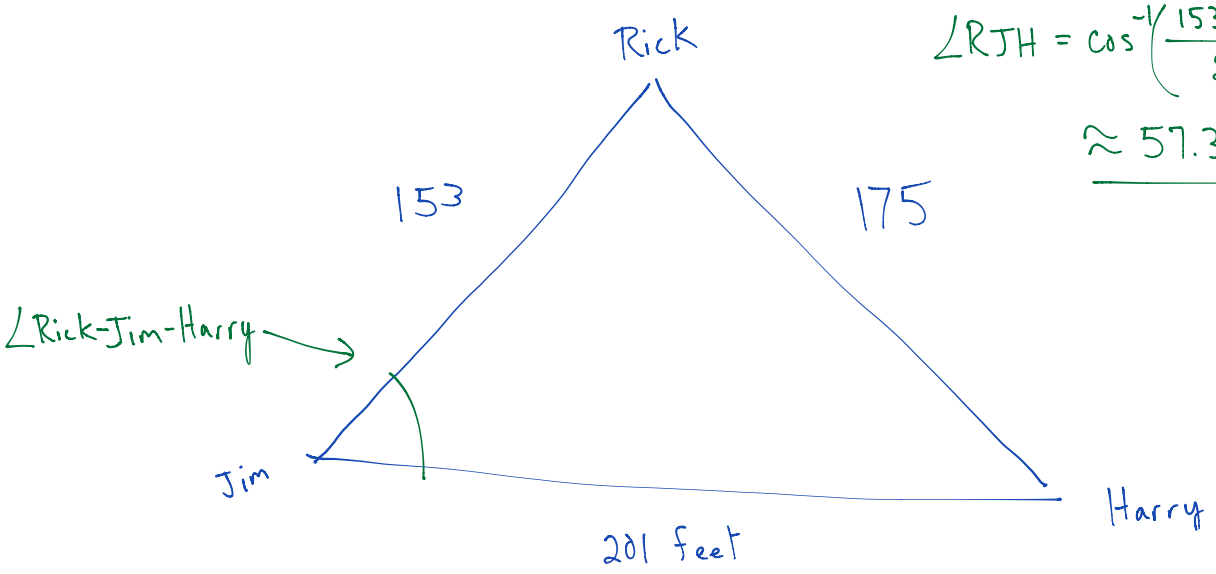
1. Juan and Sophia are standing at the seashore 10 miles apart. The coastline is a straight line between them. Both can see the same ship in the water. The angle between the coastline and the line between the ship and Juan is 35 degrees. The angle between the coastline and the line between the ship and Sophia is 45 degrees. How far is the ship from Juan?



$$\frac{10}{\sin 100} = \frac{d}{\sin 45}$$

$$d = \frac{10 \sin 45}{\sin 100} \approx 7.188 \text{ miles}$$

2. Jim, Rick, and Harry are camping in their tents. If the distance between Jim and Rick is 153 feet, the distance between Jim and Harry is 201 feet, and the distance between Rick and Harry is 175 feet, what is the measure of the angle Rick-Jim-Harry?



$$\angle RJH = \cos^{-1}\left(\frac{153^2 + 201^2 - 175^2}{2(153)(201)}\right)$$

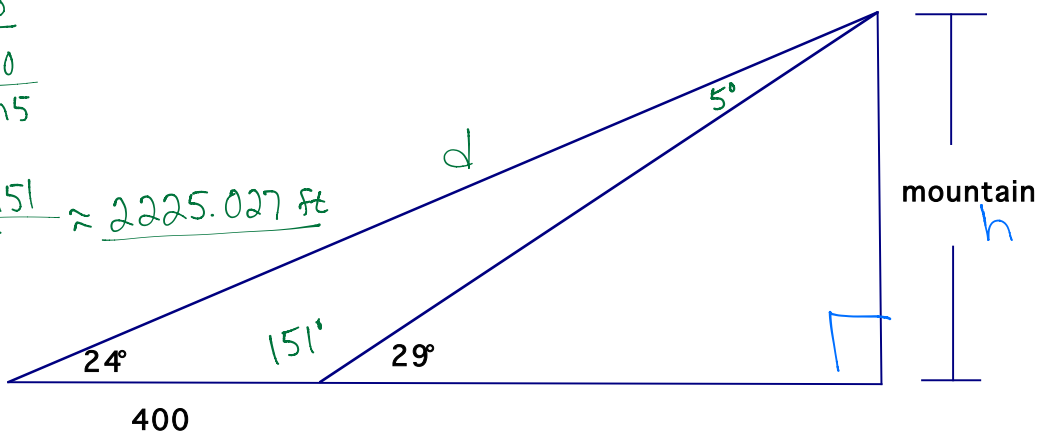
$$\approx 57.347^\circ$$

3. Find the height of the mountain.

Law of sines

$\frac{d}{\sin 151} = \frac{400}{\sin 5}$

$d = \frac{400 \sin 151}{\sin 5} \approx 2225.027$ ft



$\frac{h}{d} = \sin 24 \Rightarrow h = d \sin 24 \approx 905$ ft