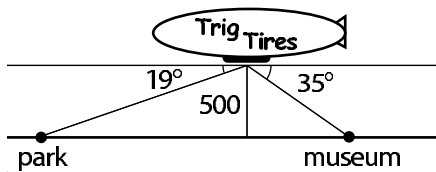


1. (5pts) Solve a right triangle if $a = 4$ and $b = 7$.

2. (7pts) Solve the triangle: $a = 5$, $\alpha = 39^\circ$, $\gamma = 105^\circ$.

3. (10pts) Solve the triangle: $c = 8$, $b = 11$, $\beta = 47^\circ$.

4. (8pts) A blimp, suspended in the air at height of 500ft, lies directly over the line between a museum and a park. If the angle of depression to the museum is 35° and the angle of depression to the park is 19° , how far is the museum from the park?



5. (8pts) An office building has a triangular base with sides 112ft, 200ft and 160ft.

a) The boss in a company with offices in the building wishes to have a corner office in the corner of the building with the sharpest angle. What is this angle?

b) What is the square footage of a floor of this office building?

6. (8pts) You take a sighting of the top of a building from a certain point and find that the angle of elevation is 33° . Then you move 200ft towards the building and take another sighting, finding the angle of elevation to be 51° now.

a) How tall is the building?

b) How far were you from the building on the second sighting?

7. (4pts) Give an example of data a, b, β where the SSA triangle does not have a solution. Draw a picture and explain.

Bonus (5pts) How fast (in mph) are people in Barrow, Alaska, moving due to Earth's rotation? Barrow is at 70° north latitude and radius of Earth is 3960mi (recall $v = r\omega$, $\omega = \theta/t$).