Extra Credit Project

MAC 1114 – Spring 2017

Due Monday, March 20, in class

1. A surveyor is measuring the distance across a small lake. He has set up his transit on one side of the lake 80 feet from a piling that is directly across from a pier on the other side of the lake. From his transit, the angle between the piling and the pier is 30°. What is the distance between the piling and the pier?

2. A building 250 feet tall casts a 50 foot long shadow. If a person looks down from the top of the building, what is the angle of depression of the person to the end of the shadow? (Assume the person's eyes are level with the top of the building.)

3. Two hikers on opposite sides of a canyon each stand precisely 525 meters above the canyon floor. They each sight a landmark on the canyon floor on a line directly between them. The angles of depression from each hiker to the landmark meter are 37° and 21°. How far apart are the hikers?

4. A photographer points a camera at a window in a nearby building forming an angle of elevation 42° with the camera platform. If the camera is 52 m from the building, how high above the platform is the window?

 5. After a windstorm, one of the hydro poles had a lean to it. The poles are 14m high and the angle between the pole and the ground is 81°. How high is the top of the pole above the ground?

6. A kite has a string 200m long. The string makes an angle of 43° with the ground. Determine the height of the kite.

7. From the edge of a 1000-foot cliff, the angles of depression to two cars in the valley below are 21° and 28°. How far apart are the cars?

8. Before cutting down a dead tree in your yard, you very sensibly decide to determine its height. Backing up 40 feet from the tree (which rises straight up from level ground), you use a theodolite (a surveyor's instrument that accurately measures angles) and note that the angle of elevation to the top of the tree is 62 degrees. How tall is the tree?

9. Approached from one direction, Mt. Baldy rises out of a perfectly level desert plain. A surveyor standing in the desert some distance from the mountain measures the angle of elevation between the desert floor and the top of the mountain to be 60°. She then backs up 1000 feet and determines the new angle of elevation to be 56°. How high above the desert plain does Mt. Baldy rise?

10. A hot air balloon is east of a stadium 700ft above ground. Two sightings are made, one at the farther side of the stadium with an angle of elevation 27° and one from the side of the stadium closest to the balloon with an angle of elevation 38°. How wide is the stadium ?