

Draw a diagram and solve the problems. Round your answers to two decimal places, as needed.

1. A six-meter-long ladder leans against a building. If the ladder has an angle of elevation of  $60^\circ$  with the ground..
  - a. ..how far up the wall does the ladder reach?
  
  
  
  
  
  
  
  
  
  - b. How far from the wall is the base of the ladder?
  
2. Find the shadow cast by a 10 foot lamp post when the angle of elevation of the sun is  $58^\circ$ .
  
  
  
  
  
  
  
  
  
3. From the top of a fire tower, a forest ranger sees his partner on the ground at an angle of depression of  $40^\circ$ . If the tower is 45 feet in height, how far is the partner from the base of the tower, to the *nearest tenth of a foot*?
  
  
  
  
  
  
  
  
  
4. Suppose you're flying a kite, and it gets caught at the very top of a tree. You sit down in frustration so that the string is touching the ground. You've let out all 100 feet of string for the kite, and the angle of elevation is 75 degrees. Instead of worrying about how to get your kite back, you wonder:
  - a. "How tall is that tree?"
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  - b. "How far away from the tree am I?"

5. A submarine dives at an angle of depression of  $15^\circ$  with respect to a line parallel to the water's surface.
- If the submarine starts at a depth of 250 ft below sea level and travels a distance of 1500 feet during the dive, what is its depth now?
6. A radio station tower was built in two sections. From a point 87 feet from the base of the tower, the angle of elevation of the top of the first section is  $25^\circ$ , and the angle of elevation of the top of the second section is  $40^\circ$ . To the *nearest foot*, what is the height of the top section of the tower?
7. Brothers Bob and Tom Katz buy a tent that has a center pole 6.25 feet high. If the sides of the tent are supposed to make a  $50^\circ$  angle with the ground, how wide is the tent?