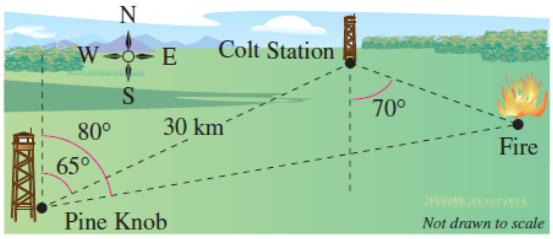
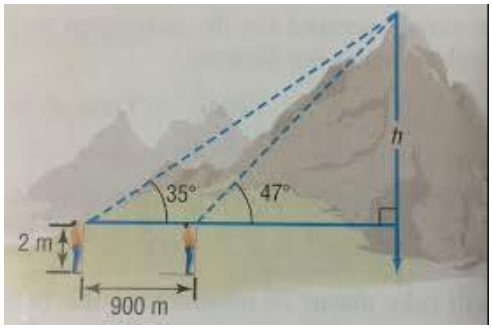
Precalculus – Unit 9 Review

1. Solve the triangle: $a = 12, b = 31, A = 20.5°$

2. ***Locating a Fire*** The bearing from the Pine Knob fire tower to the Colt Station fire tower is N 65° E, and the two towers are 30 kilometers apart. A fire spotted by rangers in each tower has a bearing of N 80° E from Pine Knob and S 70° E from Colt Station. Find the distance of the fire from each tower.



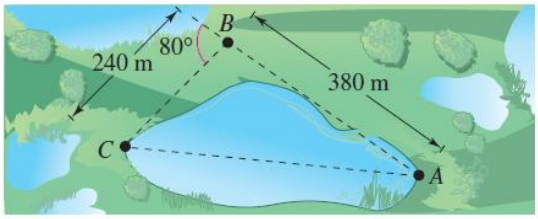
3. To measure the height of a mountain, a surveyor takes two sightings of the peak at a distance 900 meters apart on a direct line to the mountain. The first observation results in an angle of elevation of 47° and the second results in an angle of elevation of 35°. If the transit is 2 meters high, what is the height, *h,* of the mountain.



4. Solve the triangle: $a = 12, b = 17, c = 21$

5. Solve the triangle: $A = 25°, b = 9, c = 12$

6. ***Surveying*** To approximate the length of a marsh, a surveyor walks 380 meters from point A to point B. Then the surveyor turns 80° and walks 240 meters to point C (see figure). Approximate the length AC of the marsh.

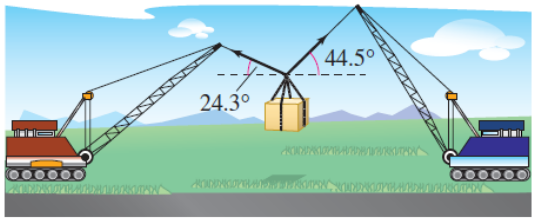


7. Find the area of the triangle in #4.

8. Find the area of the triangle in #5.

9. A boat weighs 2318 pounds and is being pulled up a boat ramp of 15°. What force is required to pull the boat up the ramp?

10. ***Tension*** The cranes shown in the figure are lifting an object that weighs 20,240 pounds. Find the tension in the cable of each crane.



11. Given a force of 400 pounds at 25° and a force of 300 pounds at 135°, find the magnitude and direction of the resultant.

12. To close a barn's sliding door, a person pulls on a rope with a constant force of 50 pounds at a constant angle of 60°. Find the work done in moving the door 12 feet to its closed position.