1. Finding the Height of a Building To measure the height of a building, two sightings are taken a distance of 50 feet apart. If the first angle of elevation is 40° and the second is 32°, what is the height of the building?

_____

2. Finding the Bearing of a Ship A ship leaves the port of Miami with bearing of S80°E and a speed of 15 knots. After 1 hour, the ship turns 90° toward the south. After 2 hours, maintaining the same speed, what is the bearing to the ship from port?

_____

3. Time Lost due to a Navigation Error In attempting to fly from city A to city B, an aircraft followed a course that was 10° in error, as indicated in the figure. After flying a distance of 50 miles, the pilot corrected the course by turning at point C and flying 70 miles farther. If the constant speed of the aircraft was 250 miles per hour, how much time was lost due to the error?

_____
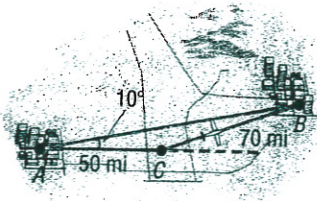
4. Calculating Distances at Sea The navigator of a ship at sea spots two lighthouses that she knows to be 3 miles apart along a straight seashore. She determines that the angles formed between two line-of-sight observations of the lighthouses and the line from the ship directly to shore are 15° and 35°. (See illustration)

(a) How far is the ship from lighthouse A? _____

(b) How far is the ship from lighthouse B? _____

(c) How far is the ship from the shore? _____
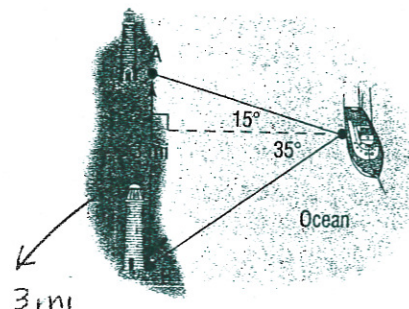
Precalc Practice Sections 7.1-7.3

5. **Revising a Flight Plan**   In attempting to fly from Chicago to Louisville, a distance of 330 miles, a pilot inadvertently took a course that was 10° in error, as indicated in the figure.

(a) If the aircraft maintains an average speed of 220 miles per hour and if the error in direction is discovered after 15 minutes, through what angle should the pilot turn to head toward Louisville? _____

(b) What average speed should the pilot maintain so that the total time of the trip is 90 minutes? _____
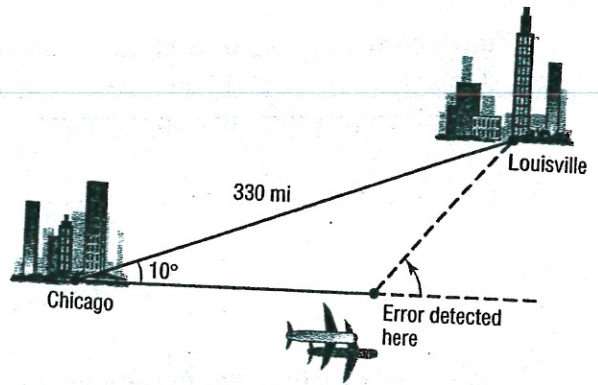
6. **Little League Baseball Field**   According to Little League baseball official regulations, the diamond is a square 60 feet on a side. The pitching rubber is located 46 feet from home plate on a line joining home plate and second base.

(a) How far is it from the pitching rubber to first base? _____

(b) How far is it from the pitching rubber to second base? _____

(c) If a pitcher faces home plate, through what angle does he need to turn to face first base? _____