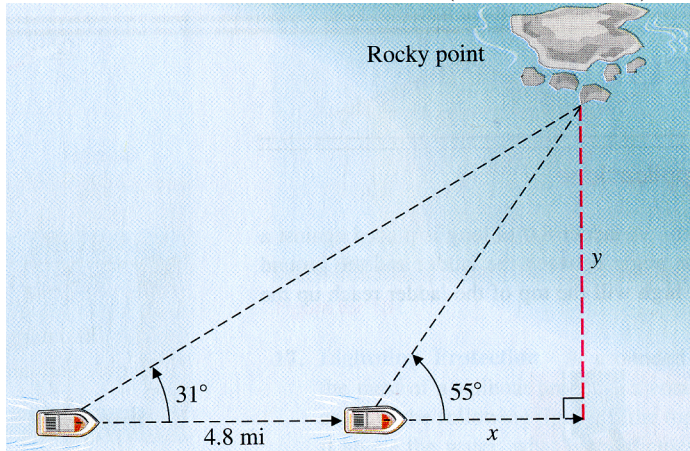


### Additional Problems Assignment 3

1. A ladder is 8m long and is placed against a building. The angle between the ladder and the ground is  $61^\circ$ . How high will the top of the ladder reach up the building? How far is the foot of the ladder from the wall of the building?
2. A boat is cruising along the coast on a straight course. A rocky point is sighted at an angle of  $31^\circ$  from the course. After continuing 4.8 mi., another sighting is taken and the point is found to be  $55^\circ$  from the course (see fig. below). How close will the boat come to the point?



3. When the angle of elevation of the sun is  $58^\circ$  (the angle the the a ray of sunlight makes with the horizontal), the shadow cast by a tree is 28 ft. long. How tall is the tree?
4. Show that the base  $b$  (the unequal side) of an isosceles triangle whose equal sides are  $a$  and whose vertex angle (the angle opposite the base) is  $\theta$  is given by  $b = 2a \sin \left( \frac{\theta}{2} \right)$ .
5. A rectangle is 48 cm long and 34 cm wide. What angle does the diagonal make with the longer side?