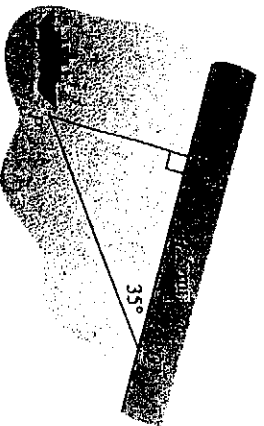


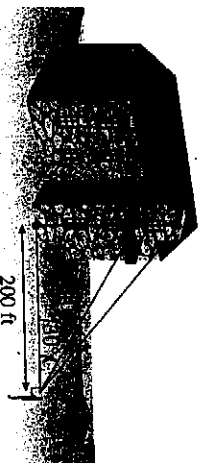
11. **Antenna Height** A guy wire attached to the top of the KSSAM radio antenna is anchored at a point on the ground 10 m from the antenna's base. If the wire makes an angle of  $55^\circ$  with level ground, how high is the KSSAM antenna?
12. **Building Height** To determine the height of the Louisiana-Pacific (LP) Tower, the tallest building in Conroe, Texas, a surveyor stands at a point on the ground, level with the base of the LP building. He measures the point to be 125 ft from the building's base and the angle of elevation to the top of the building to be  $29^\circ 48'$ . Find the height of the building.

13. **Navigation** The *Parz Verde*, a whalewatch boat, is located at point  $P$ , and  $L$  is the nearest point on the Baja California shore. Point  $Q$  is located 4.25 mi down the shoreline from  $L$  and  $\overline{PL} \perp \overline{LQ}$ . Determine the distance that the *Parz Verde* is from the shore if  $\angle PQL = 35^\circ$ .



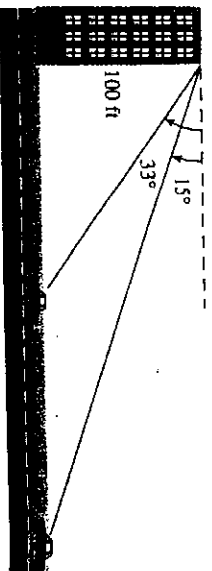
14. **Recreational Hiking** While hiking on a level path toward Colorado's front range, Otis Evans determines that the angle of elevation to the top of Long's Peak is  $30^\circ$ . Moving 1000 ft closer to the mountain, Otis determines the angle of elevation to be  $35^\circ$ . How much higher is the top of Long's Peak than Otis's elevation?

15. **Civil Engineering** The angle of elevation from an observer to the bottom edge of the Delaware River drawbridge observation deck located 200 ft from the observer is  $30^\circ$ . The angle of elevation from the observer to the top of the observation deck is  $40^\circ$ . What is the height of the observation deck?

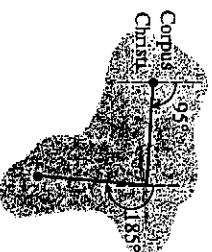


16. **Traveling Car** From the top of a 100-ft building a man observes a car moving toward him. If the angle of

depression of the car changes from  $15^\circ$  to  $33^\circ$  during the period of observation, how far does the car travel?



17. **Navigation** The Coast Guard cutter *Angelica* travels at 30 knots from its home port of Corpus Christi on a course of  $95^\circ$  for 2 h and then changes to a course of  $185^\circ$  for 2 h. Find the distance and the bearing from the Corpus Christi port to the boat.



18. **Navigation** The *Cerrito Lindo* travels at a speed of 40 knots from Fort Lauderdale on a course of  $65^\circ$  for 2 h and then changes to a course of  $155^\circ$  for 4 h. Determine the distance and the bearing from Fort Lauderdale to the boat.

19. **Land Measure** The angle of depression is  $19^\circ$  from a point 7256 ft above sea level on the north rim of the Grand Canyon level to a point 6159 ft above sea level on the south rim. How wide is the canyon at that point?

20. **Ranger Fire Watch** A ranger spots a fire from a 73-ft tower in Yellowstone National Park. She measures the angle of depression to be  $1^\circ 20'$ . How far is the fire from the tower?

21. **Civil Engineering** The bearing of the line of sight to the east end of the Royal Gorge footbridge from a point 325 ft due north of the west end of the footbridge across the Royal Gorge is  $117^\circ$ . What is the length  $l$  of the bridge?

