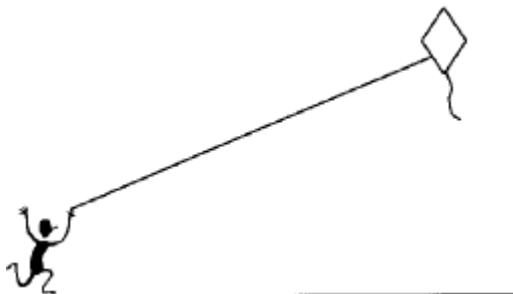
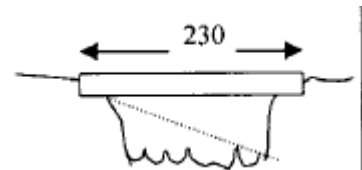
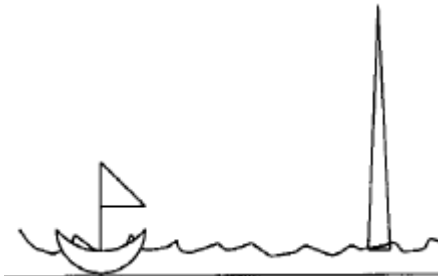
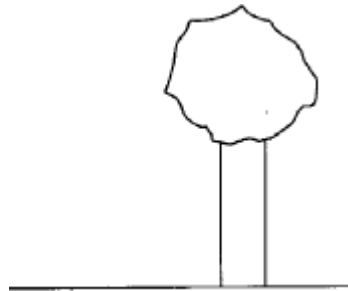


8.3 Trig Word Problems

Solve the following.

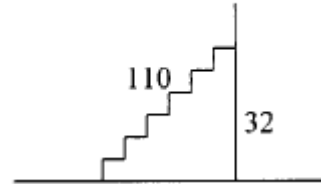
1. A 20-foot ladder leans against a wall so that the base of the ladder is 8 feet from the base of the building. What is the ladder's angle of elevation?
2. At a point on the ground 50 feet from the foot of a tree, the angle of elevation to the top of the tree is 53° . Find the height of the tree.
3. From the top of a lighthouse 210 feet high, the angle of depression of a boat is 27° . Find the distance from the boat to the foot of the lighthouse. The lighthouse was built at sea level.
4. Richard is flying a kite. The kite string has an angle of elevation of 57° . If Richard is standing 100 feet from the point on the ground directly below the kite, find the length of the kite string.
5. A 50-meter vertical tower is braced with a cable secured at the top of the tower and tied 30 meters from the base. What is the angle of depression from the top of the tower to the point on the ground where the cable is tied?
6. An airplane rises vertically 1000 feet over a horizontal distance of 5280 feet. What is the angle of elevation of the airplane's path?
7. A person at one end of a 230-foot bridge spots the river's edge directly below the opposite end of the bridge and finds the angle of depression to be 57° . How far below the bridge is the river?
8. The angle of elevation from a car to a tower is 32° . The tower is 150 ft. tall. How far is the car from the tower?



8.3 Trig Word Problems

9. A radio tower is 200 ft. high casts a shadow 75 ft. long. What is the angle of elevation of the sun?

10. An escalator from the ground floor to the second floor of a department store is 110 ft. long and rises 32 ft. vertically. What is the escalator's angle of elevation?



Solve.

11. $3x^2 - 6x = 0$

12. $x^2 - 2x = 15$

13. $2x^2 + x - 6 = 0$

14. $3(x - 5)^2 = 243$

15. $6x^2 - 4x = 1$

Find the vertex of the following equations and graph:

16. $y = -3(x - 4)^2 + 5$

17. $y = \frac{1}{2}x^2 - 4$