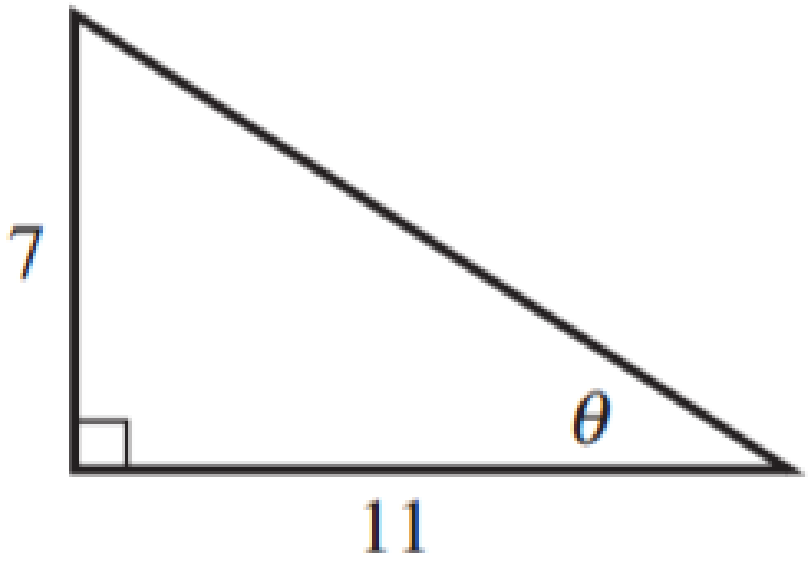
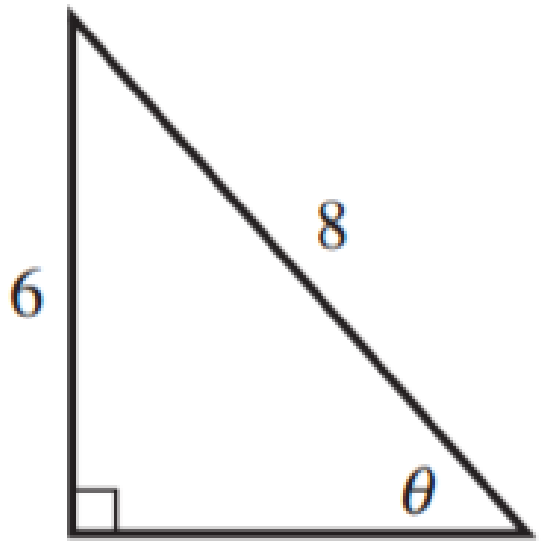
In Exercises 1–8, find the values of all six trigonometric functions of the angle θ.

5.



6.



In Exercises 9–18, assume that θ is an acute angle in a right triangle satisfying the given conditions. Evaluate the remaining trigonometric functions.

12. $\cos\theta = \frac{5}{8}$

15. $\cot\theta = \frac{11}{3}$

16. $\csc\theta = \frac{12}{5}$

18. $\sec\theta = \frac{17}{5}$

In Exercises 19–24, evaluate *without* using a calculator.

19. $\sin\left(\frac{\pi}{3}\right)$

20. $\tan\left(\frac{\pi}{4}\right)$

21. $\cot\left(\frac{\pi}{6}\right)$

22. $\sec\left(\frac{\pi}{3}\right)$

23. $\cos\left(\frac{\pi}{4}\right)$

24. $\csc\left(\frac{\pi}{3}\right)$

In Exercises 29–40, evaluate using a calculator. Be sure the calculator is in the correct mode. Give answers correct to three decimal places.

31. $\cos 19°23'$

32. $\tan 23°42'$

In Exercises 29–40, evaluate using a calculator. Be sure the calculator is in the correct mode. Give answers correct to three decimal places.

31. $\cos 19°23'$

32. $\tan 23°42'$

33. $\tan\left(\frac{\pi}{12}\right)$

34. $\sin\left(\frac{\pi}{15}\right)$

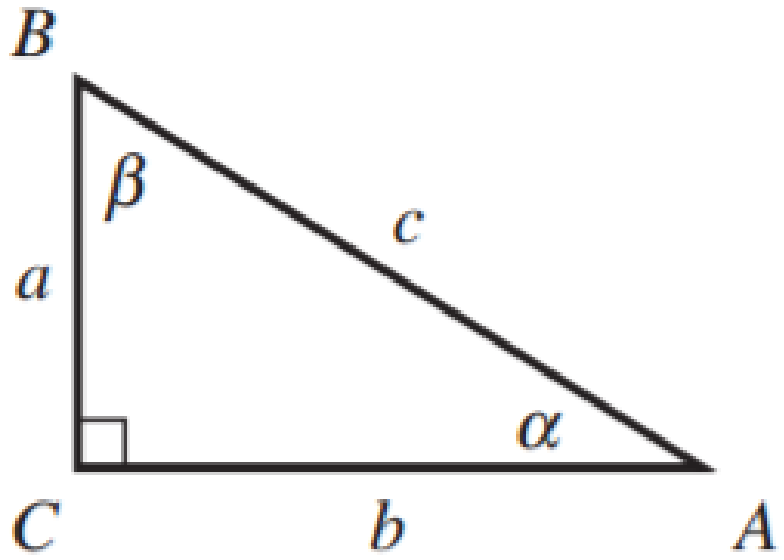
35. $\sec 49°$

36. $\csc 19°$

37. $\cot 0.89$

38. $\sec 1.24$

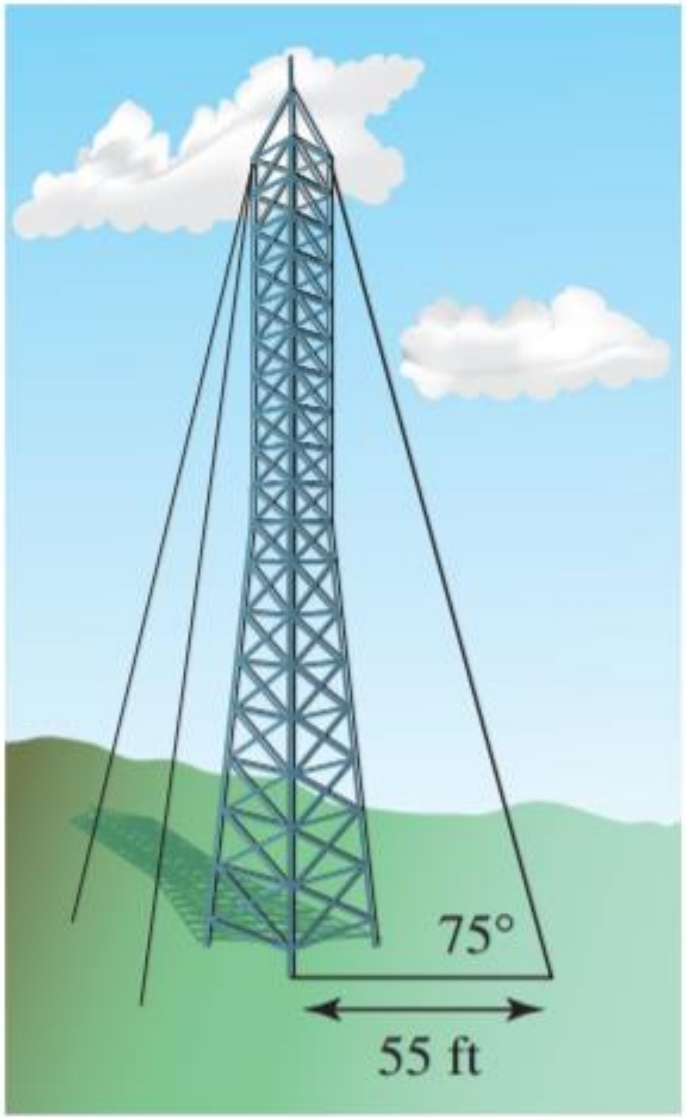
In Exercises 55–58, solve the right $\triangle ABC$ for all of its unknown parts.



55. $\alpha = 20°; a = 12.3$

57. $\beta = 55°; a = 15.58$

61. Height A guy wire from the top of the transmission tower at WJBC forms a 75° angle with the ground at a 55-foot distance from the base of the tower. How tall is the tower?



62. Height Kirsten places her surveyor's telescope on the top of a tripod 5 feet above the ground. She measures an 8° elevation above the horizontal to the top of a tree that is 120 feet away. How tall is the tree?