

Name \_\_\_\_\_

Period \_\_\_\_\_

4/06-4/10, 2020

## 534 Chapter 4 Trigonometric Functions

## Activity #3

In Exercises 35–38, use a calculator to find the value of the acute angle  $\theta$  to the nearest degree.

35.  $\sin \theta = 0.2974$

36.  $\cos \theta = 0.8771$

37.  $\tan \theta = 4.6252$

38.  $\tan \theta = 26.0307$

In Exercises 39–42, use a calculator to find the value of the acute angle  $\theta$  in radians, rounded to three decimal places.

39.  $\cos \theta = 0.4112$

40.  $\sin \theta = 0.9499$

41.  $\tan \theta = 0.4169$

42.  $\tan \theta = 0.5117$

## Practice Plus

In Exercises 43–48, find the exact value of each expression. Do not use a calculator.

43.  $\frac{\tan \frac{\pi}{3}}{2} - \frac{1}{\sec \frac{\pi}{6}}$

44.  $\frac{1}{\cot \frac{\pi}{4}} - \frac{2}{\csc \frac{\pi}{6}}$

45.  $1 + \sin^2 40^\circ + \sin^2 50^\circ$

46.  $1 - \tan^2 10^\circ + \csc^2 80^\circ$

47.  $\csc 37^\circ \sec 53^\circ - \tan 53^\circ \cot 37^\circ$

48.  $\cos 12^\circ \sin 78^\circ + \cos 78^\circ \sin 12^\circ$

In Exercises 49–50, express the exact value of each function as a single fraction. Do not use a calculator.

49. If  $f(\theta) = 2 \cos \theta - \cos 2\theta$ , find  $f\left(\frac{\pi}{6}\right)$ .

50. If  $f(\theta) = 2 \sin \theta - \sin \frac{\theta}{2}$ , find  $f\left(\frac{\pi}{3}\right)$ .

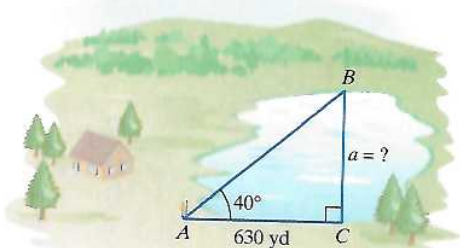
51. If  $\theta$  is an acute angle and  $\cot \theta = \frac{1}{4}$ , find  $\tan\left(\frac{\pi}{2} - \theta\right)$ .

52. If  $\theta$  is an acute angle and  $\cos \theta = \frac{1}{3}$ , find  $\csc\left(\frac{\pi}{2} - \theta\right)$ .

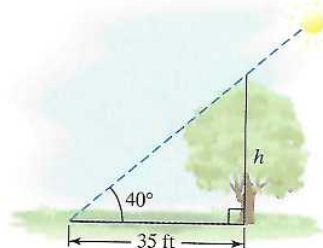
Do probs 53–58 → Show work on each problem.

## Application Exercises

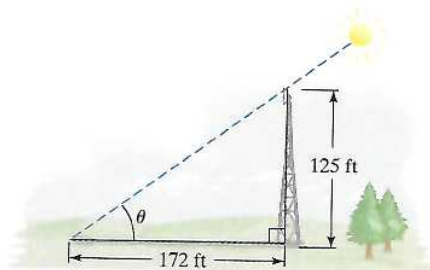
53. To find the distance across a lake, a surveyor took the measurements shown in the figure. Use these measurements to determine how far it is across the lake. Round to the nearest yard.



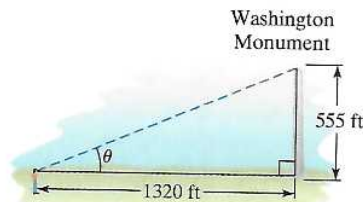
54. At a certain time of day, the angle of elevation of the sun is  $40^\circ$ . To the nearest foot, find the height of a tree whose shadow is 35 feet long.



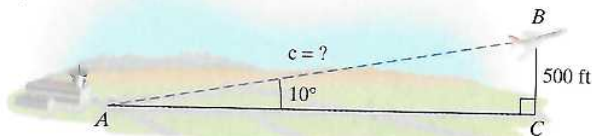
55. A tower that is 125 feet tall casts a shadow 172 feet long. Find the angle of elevation of the sun to the nearest degree.



56. The Washington Monument is 555 feet high. If you are standing one quarter of a mile, or 1320 feet, from the base of the monument and looking to the top, find the angle of elevation to the nearest degree.



57. A plane rises from take-off and flies at an angle of  $10^\circ$  with the horizontal runway. When it has gained 500 feet, find the distance, to the nearest foot, the plane has flown.



58. A road is inclined at an angle of  $5^\circ$ . After driving 5000 feet along this road, find the driver's increase in altitude. Round to the nearest foot.

