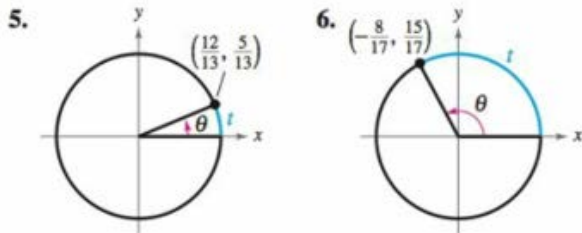


- Each real number t corresponds to a point (x, y) on the _____.
- A function f is _____ when there exists a positive real number c such that $f(t + c) = f(t)$ for all t in the domain of f .
- The smallest number c for which a function f is periodic is called the _____ of f .
- A function f is _____ when $f(-t) = -f(t)$ and _____ when $f(-t) = f(t)$.

Determining Values of Trigonometric Functions

In Exercises 5–8, determine the exact values of the six trigonometric functions of the real number t .



Finding a Point on the Unit Circle In Exercises 9–12, find the point (x, y) on the unit circle that corresponds to the real number t .

10. $t = \pi/4$ 12. $t = 4\pi/3$

Evaluating Sine, Cosine, and Tangent In Exercises 13–22, evaluate (if possible) the sine, cosine, and tangent at the real number.

16. $t = -\frac{\pi}{4}$

Evaluating Trigonometric Functions In Exercises 23–30, evaluate (if possible) the six trigonometric functions at the real number.

26. $t = 7\pi/4$ 30. $t = -\pi$

Using Period to Evaluate Sine and Cosine In Exercises 31–36, evaluate the trigonometric function using its period as an aid.

31. $\sin 4\pi$ 32. $\cos 3\pi$
 35. $\sin \frac{19\pi}{6}$ 36. $\sin\left(-\frac{8\pi}{3}\right)$

Using the Value of a Trigonometric Function In Exercises 37–42, use the value of the trigonometric function to evaluate the indicated functions.

38. $\sin(-t) = \frac{3}{8}$ 39. $\cos(-t) = -\frac{1}{5}$ 42. $\cos t = \frac{4}{5}$
 (a) $\sin t$ (a) $\cos t$ (a) $\cos(\pi - t)$
 (b) $\csc t$ (b) $\cos(t + \pi)$

Using a Calculator In Exercises 43–48, use a calculator to evaluate the trigonometric function. Round your answer to four decimal places. (Be sure the calculator is in the correct mode.)

43. $\tan \pi/3$ 44. $\csc 2\pi/3$
 47. $\sec 1.8$ 48. $\cot(-0.9)$

True or False? In Exercises 51–54, determine whether the statement is true or false. Justify your answer.

51. Because $\sin(-t) = -\sin t$, the sine of a negative angle is a negative number.
 54. $\cos\left(-\frac{7\pi}{2}\right) = \cos\left(\pi + \frac{\pi}{2}\right)$
 55. **Conjecture** Let (x_1, y_1) and (x_2, y_2) be points on the unit circle corresponding to $t = t_1$ and $t = \pi - t_1$, respectively.
 (a) Identify the symmetry of the points (x_1, y_1) and (x_2, y_2) .
 (b) Make a conjecture about any relationship between $\sin t_1$ and $\sin(\pi - t_1)$.
 (c) Make a conjecture about any relationship between $\cos t_1$ and $\cos(\pi - t_1)$.
 56. **Using the Unit Circle** Use the unit circle to verify that the cosine and secant functions are even and that the sine, cosecant, tangent, and cotangent functions are odd.
 57. **Verifying Expressions Are Not Equal** Verify that $\cos 2t \neq 2 \cos t$ by approximating $\cos 1.5$ and $2 \cos 0.75$.