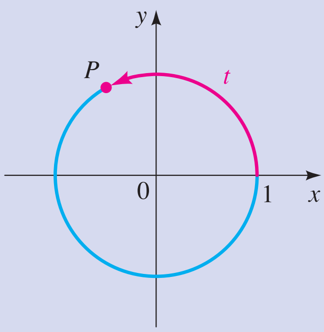
5 Test



1. The point $P(x, y)$ is on the unit circle in quadrant IV. If $x = \sqrt{11}/6$, find y.

2. The point P in the figure at the left has y-coordinate $\frac{4}{5}$. Find:

(a) $\sin t$ (b) $\cos t$

(c) $\tan t$ (d) $\sec t$

3. Find the exact value.

(a) $\sin \dfrac{7\pi}{6}$ (b) $\cos \dfrac{13\pi}{4}$

(c) $\tan\left(-\dfrac{5\pi}{3}\right)$ (d) $\csc \dfrac{3\pi}{2}$

4. Express $\tan t$ in terms of $\sin t$, if the terminal point determined by t is in quadrant II.

5. If $\cos t = -\frac{8}{17}$ and if the terminal point determined by t is in quadrant III, find $\tan t \cot t + \csc t$.

6–7 ■ A trigonometric function is given.

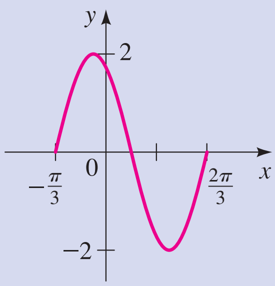
(a) Find the amplitude, period, and phase shift of the function.

(b) Sketch the graph.

6. $y = -5 \cos 4x$ **7.** $y = 2 \sin\left(\dfrac{1}{2}x - \dfrac{\pi}{6}\right)$

8–9 ■ Find the period, and graph the function.

8. $y = -\csc 2x$ **9.** $y = \tan\left(2x - \dfrac{\pi}{2}\right)$



10. The graph shown at left is one period of a function of the form $y = a \sin k(x - b)$. Determine the function.

11. Let $f(x) = \dfrac{\cos x}{1 + x^2}$.

(a) Use a graphing device to graph f in an appropriate viewing rectangle.

(b) Determine from the graph if f is even, odd, or neither.

(c) Find the minimum and maximum values of f.

12. A mass suspended from a spring oscillates in simple harmonic motion. The mass completes 2 cycles every second and the distance between the highest point and the lowest point of the oscillation is 10 cm. Find an equation of the form $y = a \sin \omega t$ that gives the distance of the mass from its rest position as a function of time.

13. An object is moving up and down in damped harmonic motion. Its displacement at time $t = 0$ is 16 in; this is its maximum displacement. The damping constant is $c = 0.1$ and the frequency is 12 Hz.

(a) Find a function that models this motion.

(b) Graph the function.