

3. Evaluate the following expressions:

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

b. $\cos(45^\circ)$.

c. $\sin(330^\circ)$.

d. $\cos\left(\frac{\pi}{2}\right)$.

e. $\cos\left(\frac{2\pi}{3}\right)$.

f. $\sin\left(\frac{5\pi}{4}\right)$.

g. $\sin\left(\frac{7\pi}{6}\right)$.

h. $\cos\left(\frac{11\pi}{6}\right)$.

i. $\cos\left(\frac{17\pi}{6}\right)$.

k. $\sin\left(\frac{16\pi}{3}\right)$.

l. $\tan\left(\frac{3\pi}{4}\right)$.

m. $\cot\left(\frac{4\pi}{3}\right)$.

n. $\csc(\pi)$.

o. $\sec(360^\circ)$.

4. a. Use the sine and cosine functions to find the coordinates of the point P in Figure 1a that is specified by $\frac{5\pi}{3}$ on the circumference of a circle of radius 10 units. **Clearly show your use of the sine and cosine functions.**

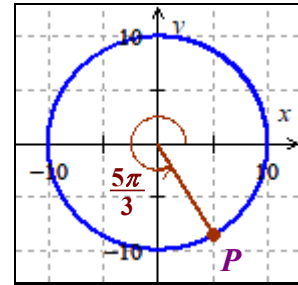


Figure 1a

- b. Use the sine and cosine functions to find the coordinates of the point Q in Figure 1b that is specified by $\frac{7\pi}{6}$ on the circumference of a circle of radius 3 units. **Clearly show your use of the sine and cosine functions.**

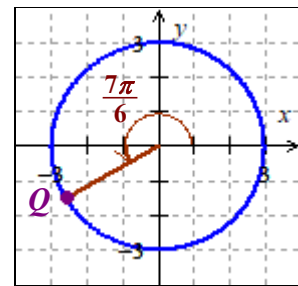


Figure 1b

5. If $\sin(\theta) = \frac{3}{4}$ and $\frac{\pi}{2} < \theta < \pi$, find the exact value of the following:

a. $\cos(\theta)$

b. $\sin(\theta + 2\pi)$

c. $\tan(\theta)$

d. $\sec(\theta)$

e. $\csc(\theta)$

6. Find *all* of the solutions to the following equations:

a. $3\sin(x) + 4 = 5$

b. $2\cos(\theta) = 1$

c. $2\sin(3\theta) + \sqrt{3} = 0$

d. $7 + 3\sqrt{2}\cos(4t) = 4$

7. Find all of the solutions to the following equations on the interval $[0, 2\pi)$.

a. $6\cos(2x) + 5 = 2$

b. $2 - 3\sin(4\theta) = 5$

8. Evaluate the following. Show your steps. (Do not use a calculator!)

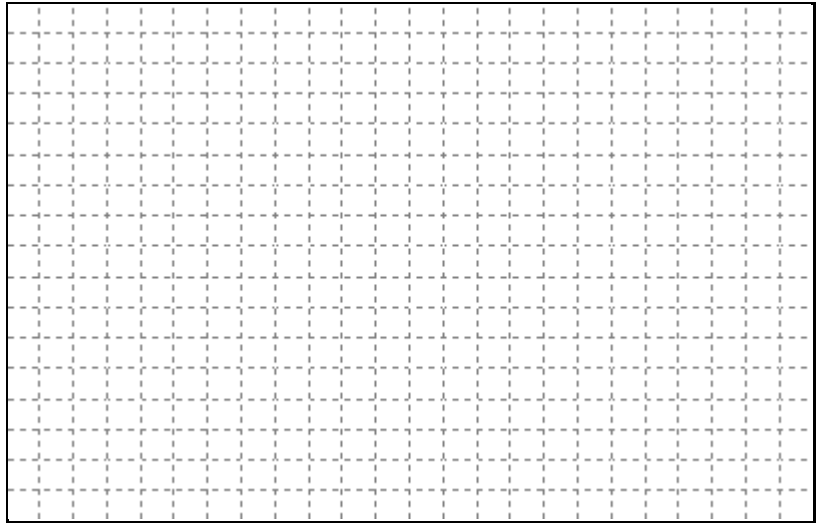
a. $\sin\left(\cos^{-1}\left(-\frac{1}{2}\right)\right)$

b. $\sin^{-1}\left(\sin\left(\frac{7\pi}{4}\right)\right)$

c. $\cos^{-1}\left(\sin\left(\frac{4\pi}{3}\right)\right)$

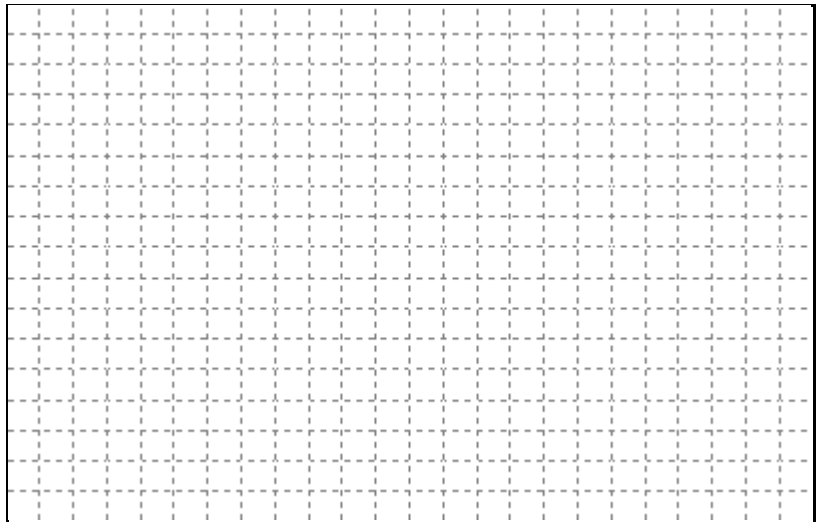
d. $\cos^{-1}\left(\cos\left(\frac{8\pi}{7}\right)\right)$

9. Sketch a graph of the function $g(t) = 3 \sin\left(2t + \frac{\pi}{4}\right) - 2$. State the period, midline, and amplitude of g .



Draw a graph of $y = g(t)$.

10. Sketch a graph of the function $q(x) = 2 \cos\left(\frac{\pi}{2}x + \frac{\pi}{4}\right) - 3$. State the period, midline, and amplitude of q .



Draw a graph of $y = q(x)$.

11. Find four algebraic rules (one using “positive sine”, one using “negative (reflected) sine”, one using “positive cosine”, and one using “negative (reflected) cosine”) for the function $y = p(x)$ graphed in Figure 2.

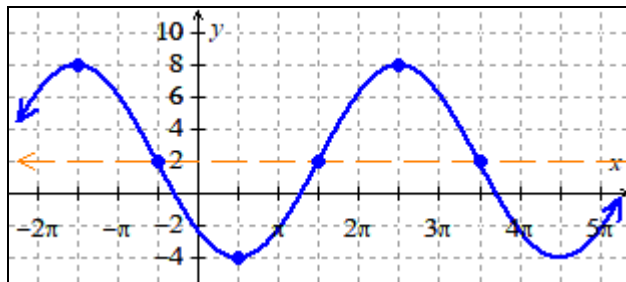


Figure 2: A graph of $y = p(x)$.

12. a. Find four algebraic rules (one using “positive sine”, one using “negative (reflected) sine”, one using “positive cosine”, and one using “negative (reflected) cosine”) for the function $y = f(t)$ graphed in Figure 3.

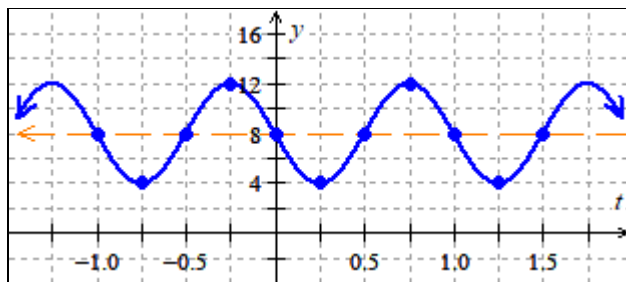


Figure 3: A graph of $y = f(t)$.

- b. Use one of your answers to part a to find exact solutions to $f(t) = 10$.