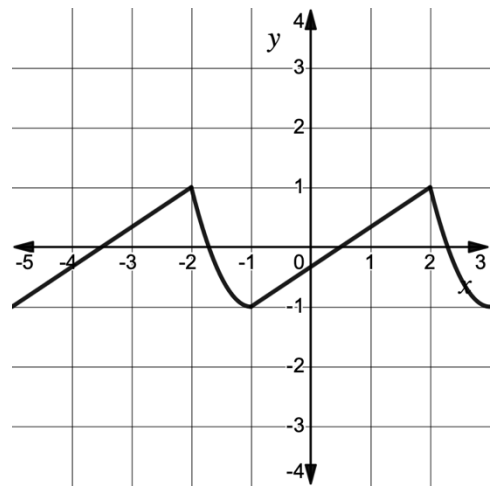
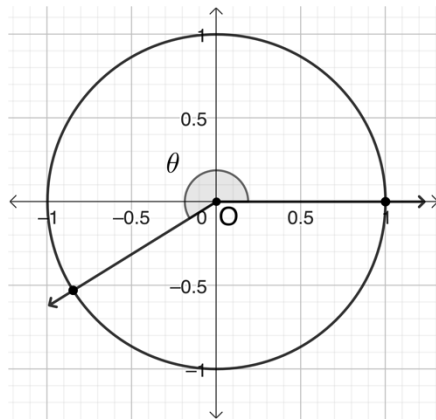


1. Two periods of a periodic function $y = f(x)$ are shown.
 - a. Find $f(6)$.
 - b. Find $f(41)$.

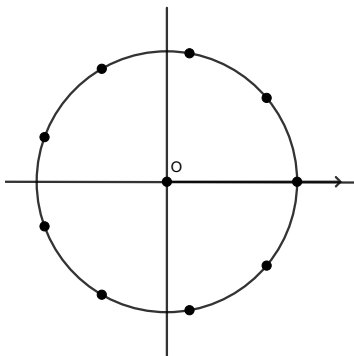


2. An angle, θ , is shown in standard position. Estimate $\sin \theta$, $\cos \theta$, and $\tan \theta$.



3. A central angle on a circle of radius 8 inches has an arc length of 6π inches. Find the measure of the central angle, in radians.

4. The 9 points on the perimeter of the circle are equally spaced. Angle ω in standard position has a terminal ray that passes through Point A, one of the points on the circle. The measure of ω is $\frac{14}{9}\pi$. Label Point A.



5. Use the digits 1-9 at most one time each to complete the statement.

$$\sin\left(\frac{\square\square}{\square\square}\pi\right) = \sin\left(\frac{\square\square}{\square\square}\pi\right) = \sin\left(-\frac{\square\square}{\square\square}\pi\right)$$

6. True or False?

a. For $0 \leq \theta \leq \frac{\pi}{2}$, $\sin \theta = \cos\left(\frac{\pi}{2} - \theta\right)$

b. $\theta = \frac{11\pi}{3}$ and $\theta = -\frac{4\pi}{3}$ have the same reference angle.

7. Evaluate:

a. $\cos(7\pi)$

b. $\tan\left(-\frac{\pi}{3}\right)$

c. $\sin\left(\frac{13\pi}{2}\right)$

8. Which angles are *coterminal* with $\theta = 11\pi/6$? Select all that apply.

- A. $\pi/6$
- B. $-\pi/6$
- C. $5\pi/6$
- D. $21\pi/6$
- E. $13\pi/6$
- F. $23\pi/6$
- G. $-13\pi/6$

9. For which angle(s) between 0 and 2π is $\cos \theta = -\frac{\sqrt{3}}{2}$ and $\tan \theta = -\frac{\sqrt{3}}{3}$. Give your answer in radians.

10. Without a calculator, put the following in order from least to greatest.

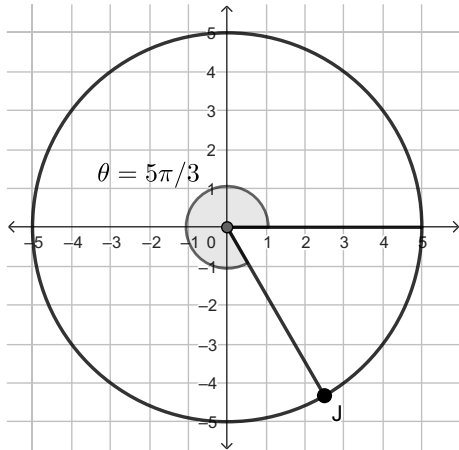
$$\sin 9\pi$$

$$\cos 9\pi$$

$$\cos 10\pi$$

$$\sin \frac{11\pi}{4}$$

11. Find the exact coordinates of Point J.



12. Without a calculator, find each of the following.

a. $\cos(2\pi - \alpha)$

b. $\sin(-\alpha)$

c. $\sin(\alpha + 4\pi)$

d. $\cos(\alpha + \pi)$

e. $\sin(\pi - \alpha)$

