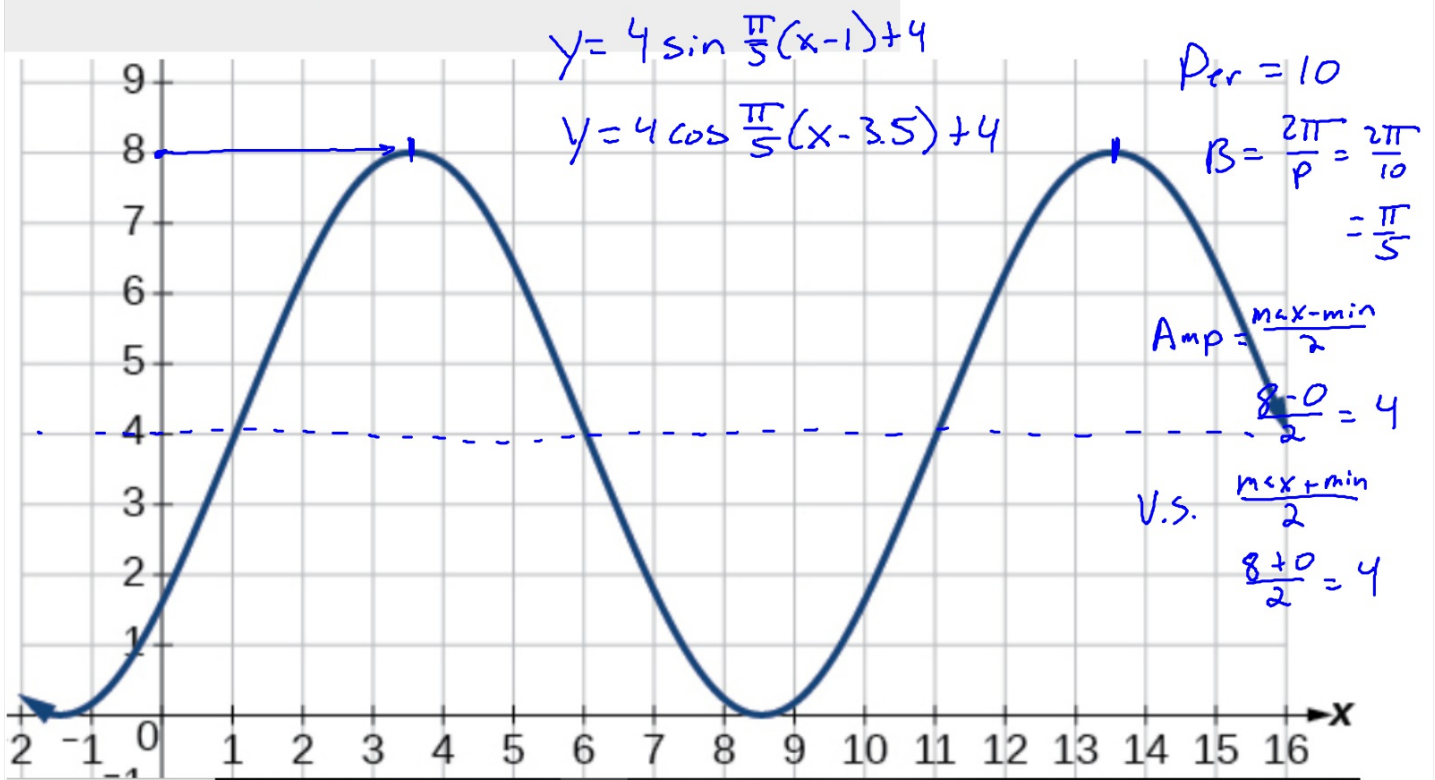


Determine the equation for the sinusoidal function



For the following exercises, let $f(x) = \cos x$.

On $[0, 2\pi)$, solve $f(x) = 0$.

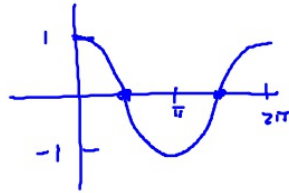
$$\frac{\pi}{2}, \frac{3\pi}{2}$$

On $[0, 2\pi)$, solve $f(x) = -\frac{\sqrt{2}}{2}$.

$$\frac{3\pi}{4}, \frac{5\pi}{4}$$

Evaluate $f\left(\frac{2\pi}{3}\right)$

$$-\frac{1}{2}$$



On $[0, 2\pi)$, solve $f(x) = \frac{\sqrt{3}}{2}$.

$$\frac{\pi}{6}, \frac{11\pi}{6}$$

On $[0, 2\pi)$, the maximum value(s) of the function occur(s) at what x-value?

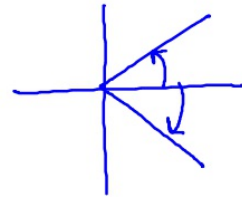
$$x=0$$

On $[0, 2\pi)$, the minimum value(s) of the function occur(s) at what x-value? $x=\pi$

Show that $f(x) = f(-x)$. This means that $f(x) = \cos x$ is an even function and possesses symmetry with respect to y-axis?

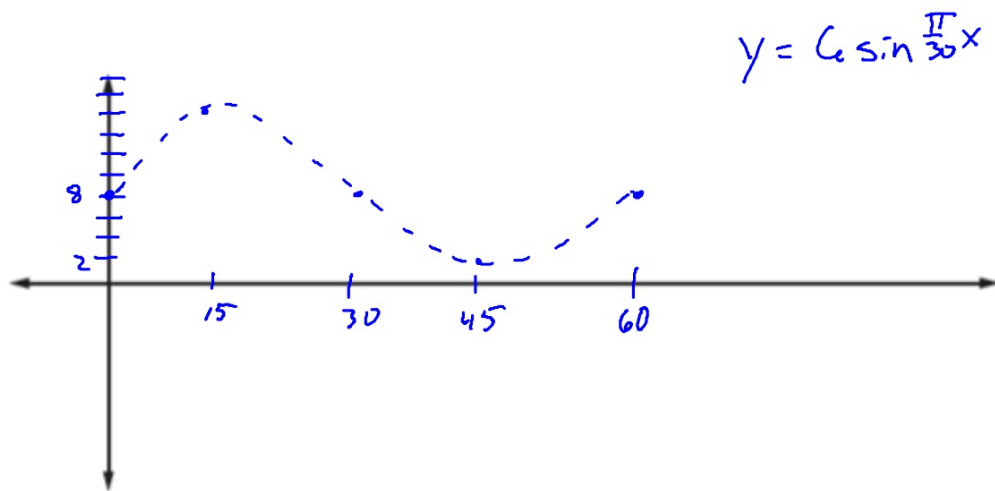
$$f\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$$

$$f\left(-\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$$

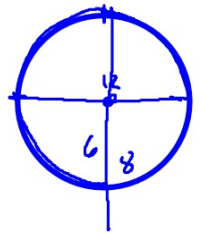


The center of a Ferris wheel is 8 meters above the ground. The Ferris wheel itself has a diameter of 12 meters. The wheel turns counterclockwise at a constant rate and takes 60 seconds to make one complete revolution.

- a. Suppose Jim and his friends enter a seat directly at the 3 o'clock position. Sketch a graph that you would expect to show their height above the ground during a two-minute ride. Label the x-axis of your sketch using seconds. Label the y-axis using meters.



$$y = 6 \sin \frac{\pi}{30} x + 8$$



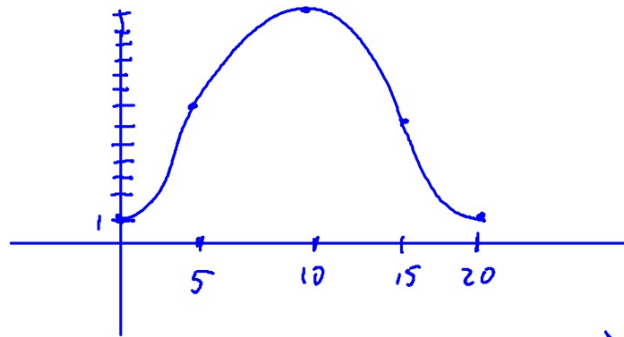
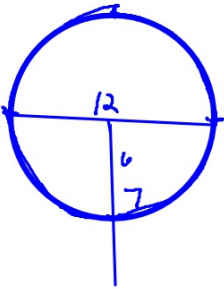
$$B = \frac{2\pi}{P}$$

$$= \frac{2\pi}{60} = \frac{\pi}{30}$$

- b. What is the maximum height of the Ferris wheel? Minimum height?
- c. Write the equation to model path of the Ferris wheel.

The center of a Ferris wheel in an amusement park is 7 meters above the ground and the Ferris wheel itself is 12 meters in diameter. The wheel turns counterclockwise at a constant rate and takes 20 seconds to make one complete revolution.

Yolanda and her friends enter their seat when it is directly below the wheel's center. Write an equation to model the height of the Ferris wheel at different times of the ride.



$$y = -6 \cos \frac{\pi}{10} x + 7$$