

How many cycles are there between 0 and  $2\pi$ ?

3

What is the period?

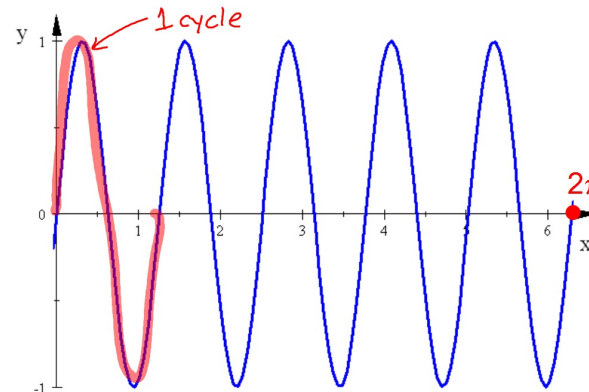
$$\frac{\text{TOTAL WIDTH}}{\# \text{ cycles}} = \frac{2\pi}{3}$$

How many cycles are there between 0 and  $2\pi$ ?

5

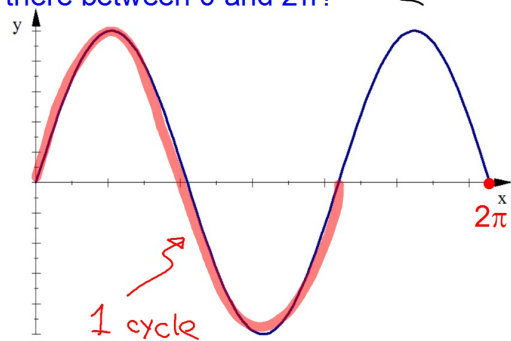
What is the period?

$$\frac{2\pi}{5}$$



How many cycles are there between 0 and  $2\pi$ ?

$1\frac{1}{2}$  What is the period?

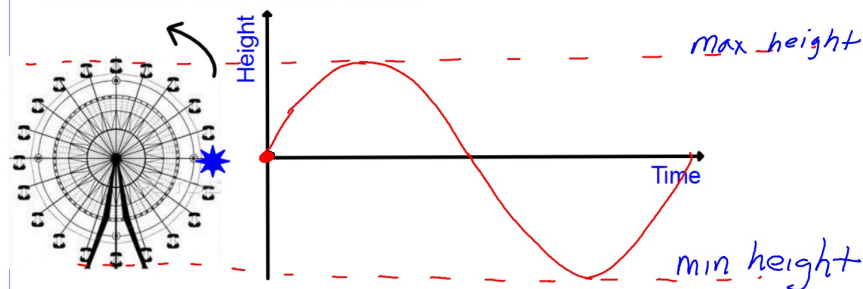


$$\frac{2\pi}{1\frac{1}{2}} = \frac{2\pi}{\frac{3}{2}}$$

$$= 2\pi \cdot \frac{2}{3}$$

$$= \frac{4\pi}{3}$$

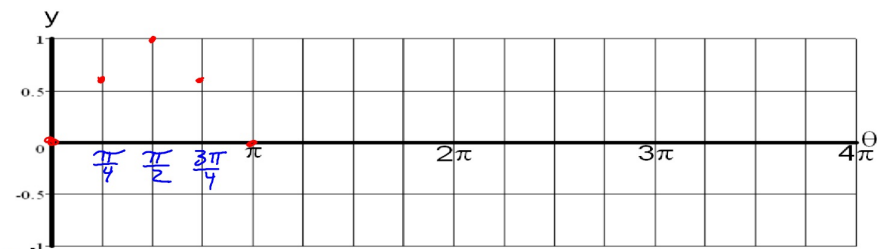
Suppose the you get on a Ferris Wheel at the spot marked with the star. Sketch the graph of your height above/below the spot marked with the star as the Ferris Wheel turns.



Use a calculator to fill in the table. Round to the nearest hundredth.

$\theta$	0	$\frac{\pi}{4}$	$\frac{\pi}{2}$	$\frac{3\pi}{4}$	$\pi$	$\frac{5\pi}{4}$	$\frac{3\pi}{2}$	$\frac{7\pi}{4}$	$2\pi$	$\frac{9\pi}{4}$	$\frac{5\pi}{2}$	$\frac{11\pi}{4}$	$3\pi$	$\frac{13\pi}{4}$	$\frac{7\pi}{2}$	$\frac{15\pi}{4}$	$4\pi$
$\sin \theta$	0	.71	1	.71	0	-.71	-1	-.71	0	.71	1	.71	0	-.71	-1	-.71	0

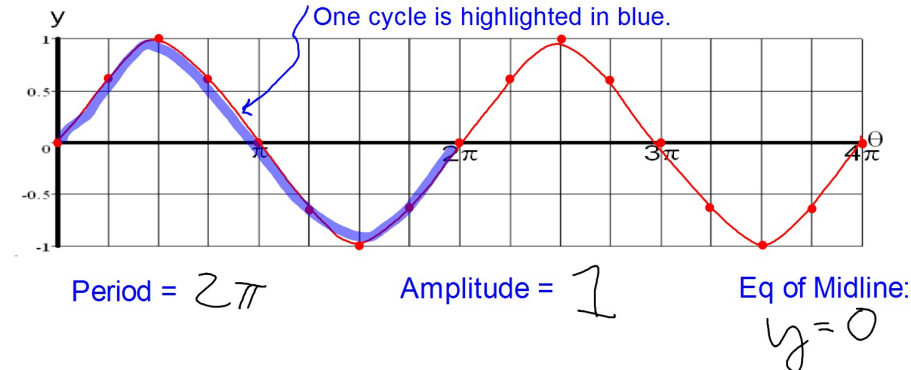
Graph the data in this table to see what the Sine Function looks like.



Use a calculator to fill in the table. Round to the nearest hundredth.

$\theta$	0	$\frac{\pi}{4}$	$\frac{\pi}{2}$	$\frac{3\pi}{4}$	$\pi$	$\frac{5\pi}{4}$	$\frac{3\pi}{2}$	$\frac{7\pi}{4}$	$2\pi$	$\frac{9\pi}{4}$	$\frac{5\pi}{2}$	$\frac{11\pi}{4}$	$3\pi$	$\frac{13\pi}{4}$	$\frac{7\pi}{2}$	$\frac{15\pi}{4}$	$4\pi$
$\sin \theta$	0	.71	1	.71	0	-.71	-1	-.71	0	.71	1	.71	0	-.71	-1	-.71	0

Graph the data in this table to see what the Sine Function looks like.

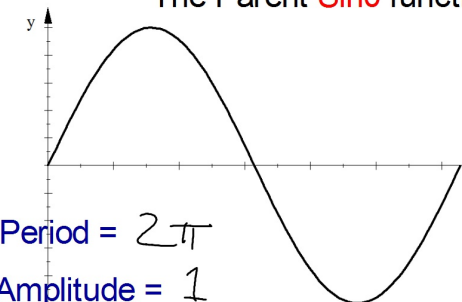


Demonstrations for the graph of a Sine Function.

<https://www.geogebra.org/m/hrFQRycn>

<http://www.intmath.com/trigonometric-graphs/1-graphs-sine-cosine-amplitude.php>

The Parent  $\sin \theta$  function:



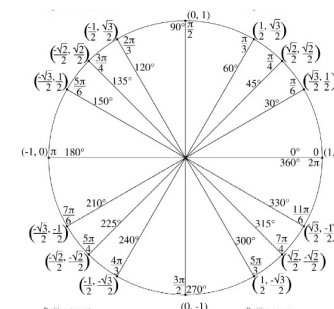
Period =  $2\pi$

Amplitude = 1

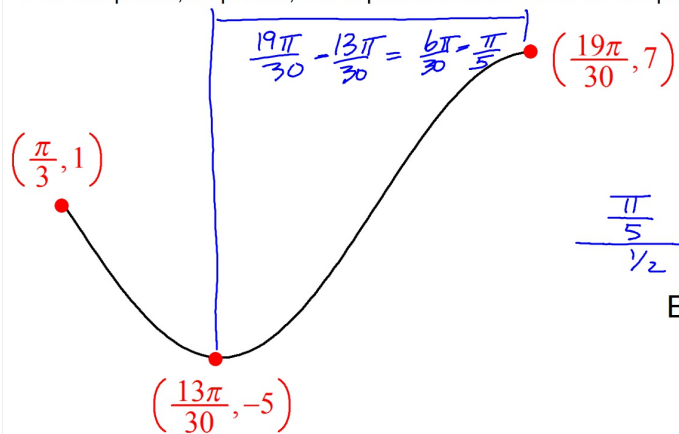
Midline:  $y = 0$

Max = 1 at  $\theta = \frac{\pi}{2}$  x-int at  $\theta = 0, \pi, 2\pi$  Domain:  $\mathbb{R}$   
or  $(-\infty, \infty)$

Min = -1 at  $\theta = \frac{3\pi}{2}$  y-int when  $\theta = 0$  Range:  $-1 \leq y \leq 1$   
or  $[-1, 1]$



Find the period, amplitude, and equation of the midline for this portion of a Sinx graph.



Amplitude:

$$7 - 1 = 6$$

Period:

$$\frac{\frac{\pi}{5}}{\frac{1}{2}} = \frac{\pi}{5} \cdot 2 = \frac{2\pi}{5}$$

Eq of Midline:

$$y = 1$$