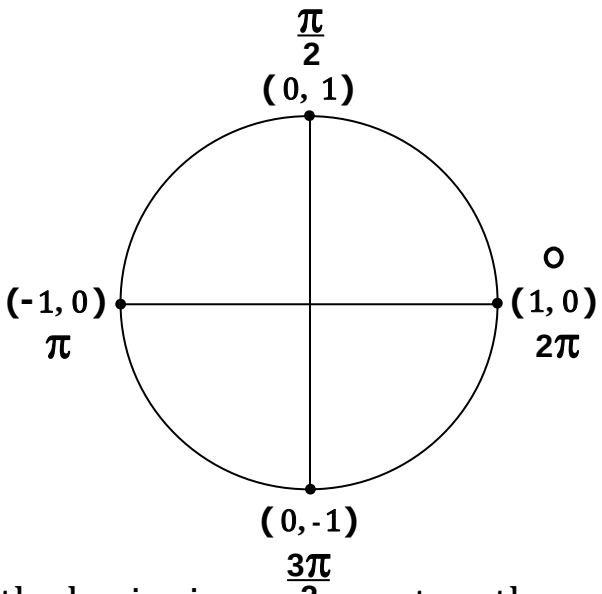
Graphing a Basic Sine Curve

$y = \sin x$



To understand the basic sine curve, set up the unit circle and then "unwrap" it counterclockwise starting from 0 radians and moving the way around to 2π radians. Find sine (the y-value) for each angle:

One complete cycle goes from 0 to 2π.

$\sin(0) = 0$ — sin x at 0 radians is 0

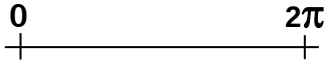
$\sin\left(\frac{\pi}{2}\right) = 1$ — sin x at $\pi/2$ radians is 1

$\sin(\pi) = 0$ — sin x at π radians is 0

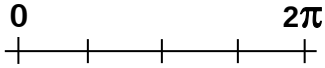
$\sin\left(\frac{3\pi}{2}\right) = -1$ — sin x at $3\pi/2$ radians is -1

$\sin(2\pi) = 0$ — sin x at 2π radians is 0

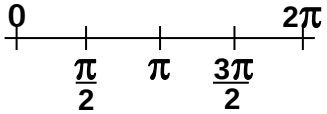
A. Set up a cycle from 0 to 2π:



B. Cut it into four equal parts:



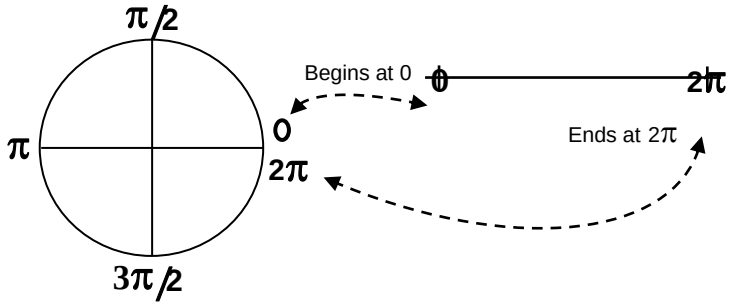
C. Finish labeling the x-axis:

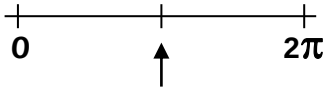


Continued →

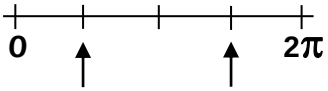
Graphing sine (what we've done so far)

Refer to the unit circle to help set up the graph of sine. One complete cycle is from 0 to 2π. This is where the basic graph of $y = \sin x$ begins and ends.

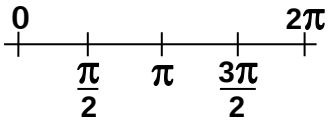




Cut the graph in half.

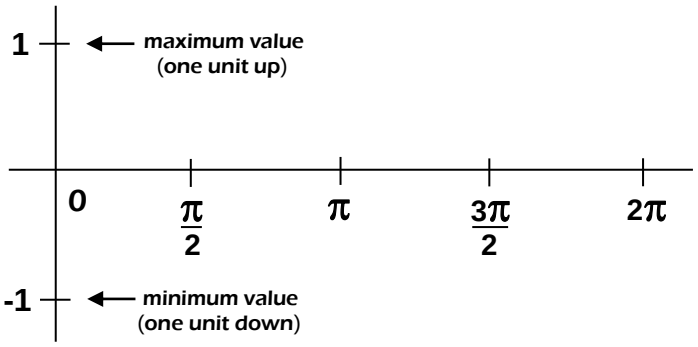


Cut it in half again.

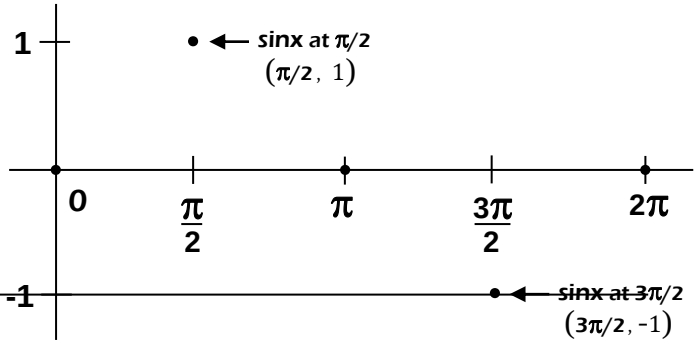


Use the unit circle to complete the x-axis.

Now you can draw and label the y-axis. The cycle begins at 0, which is where the y-axis is located. The amplitude is 1 on the basic sine graph: one unit above the x-axis and one unit below the x-axis.



Sinx at 0, π, and 2π is 0. These are the zeros or x-intercepts. Place a point at each of these locations. Sin x at $\frac{\pi}{2}$ is 1 and -1 at $\frac{3\pi}{2}$. Place a point at each of these locations also.



The graph of sine is a wave ∼ that begins at 0 and ends at 2π. Start your curve at 0, going up to the maximum value at $x = \frac{\pi}{2}$, down through π, continuing on to the minimum value at $x = \frac{3\pi}{2}$ and then back up to 2π.