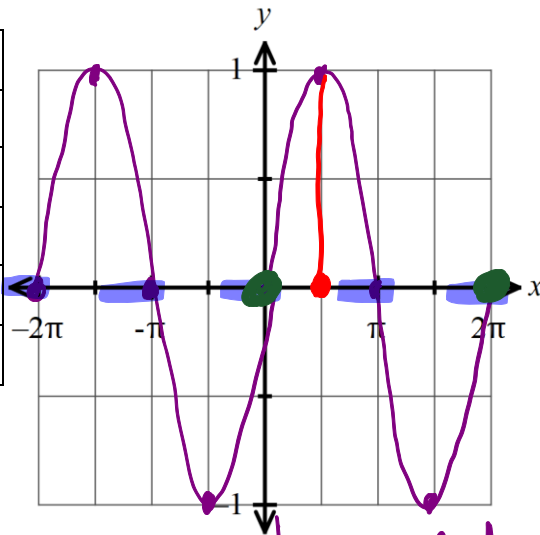


Name of Graph: Sine

Equation:  $y = \sin \theta$   $f(\theta) = \sin \theta$

$x$	$f(x)$
0	0
$\frac{\pi}{2}$	1
$\pi$	0
$\frac{3\pi}{2}$	-1
$2\pi$	0



$f$  1 cycle

cycle = 1 complete wave

### Key Features

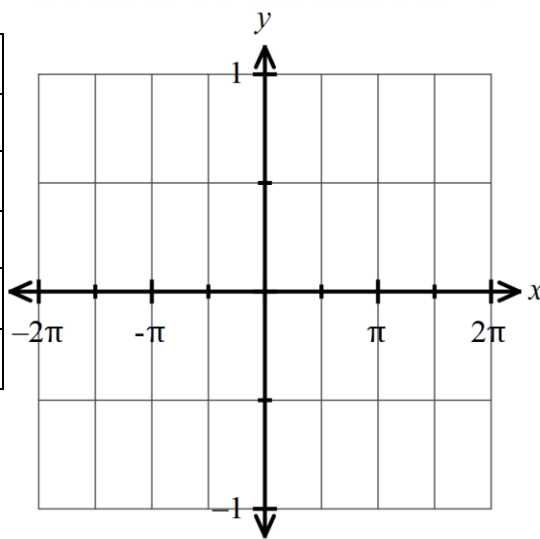
Domain:  $(-\infty, \infty)$   
 Range:  $[-1, 1]$   
 x-intercept(s):  $x = \pi k$   
 y-intercept:  $(0, 0)$   
 Increasing: periodic  
 Decreasing: periodic  
 Constant: N/A  
 Amplitude: 1  
 Period:  $2\pi$

Positive: periodic  
 Negative: periodic  
 Maximums / Minimums: absolute  
 Symmetry: odd  
 End Behavior:  
 $\lim_{x \rightarrow -\infty} f(x) = N/A$   
 $\lim_{x \rightarrow \infty} f(x) = N/A$   
 Vertical Shift: 0  
 $y = 0$   
 Phase Shift: 0

Name of Graph: \_\_\_\_\_

Equation: \_\_\_\_\_

$x$	$f(x)$



### Key Features

Domain:  
 Range:  
 x-intercept(s):  
 y-intercept:  
 Increasing:  
 Decreasing:  
 Constant:  
 Amplitude:  
 Period:

Positive:  
 Negative:  
 Maximums / Minimums:  
 Symmetry:  
 End Behavior:  
 $\lim_{x \rightarrow -\infty} f(x) =$   
 $\lim_{x \rightarrow \infty} f(x) =$   
 Vertical Shift:  
 Phase Shift:

Steps for solving sine equation:

- ① get sine by itself
- ② use All Students Take Calculus to find what quadrants to use & if needed draw triangles
- ③ find reference angle
  - unit circle
  - use calc.
- ④ find angles in standard position
  - $\pm 180^\circ$  or  $-360^\circ$
  - $\pm \pi$  or  $-2\pi$

ex. 1

$$\frac{6\sqrt{2} \sin \theta}{6\sqrt{2}} = \frac{3\sqrt{6}}{6\sqrt{2}}$$

$$\sin \theta = \frac{\sqrt{3}}{2}$$



unit 7  
 $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = \theta$

unit 6  
use unit circle to find  $y = \frac{\sqrt{3}}{2}$

ref  $\angle = 60^\circ$

$$\theta = 60^\circ, 120^\circ$$

or  
 $\theta = \frac{\pi}{3}, \frac{2\pi}{3}$

Steps for solving sine equation: