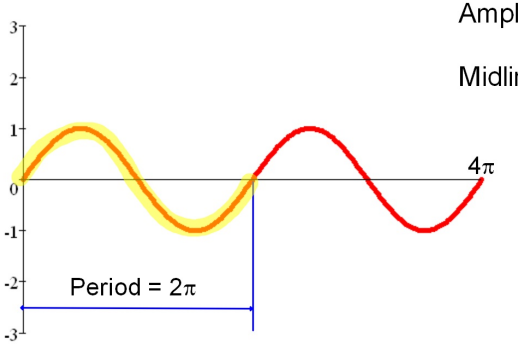
Parent Function:
y = Sinθ

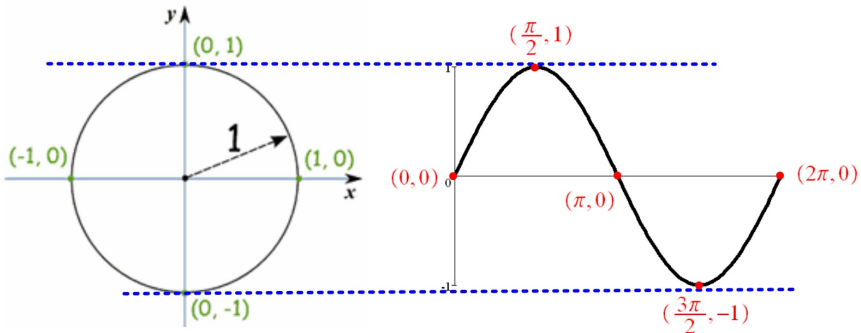
Period = 2π

Amplitude = 1

Midline: $y = 0$

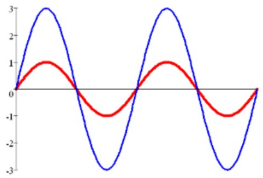


The Parent Function y = Sinθ



1. Y = 3sinθ

y = Sinθ



y = aSinθ

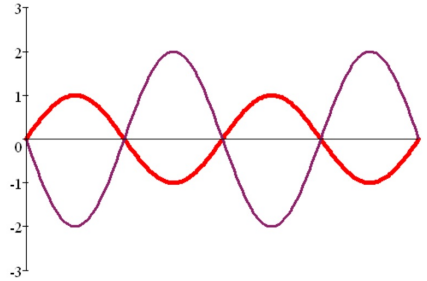
a = Amplitude

Stretch or Shrink Factor.

y= -2sinθ

y = Sinθ

y = -2sinθ is upside down and twice as tall as the parent function y = sinθ



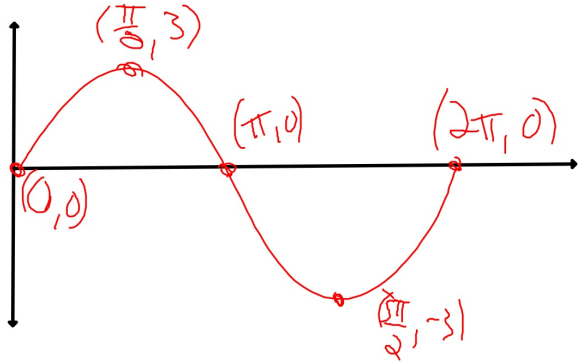
$y = a\sin\theta$

$|a|$ = Amplitude (vertical stretch or shrink factor)

$a<0$ x-axis reflection
upside down

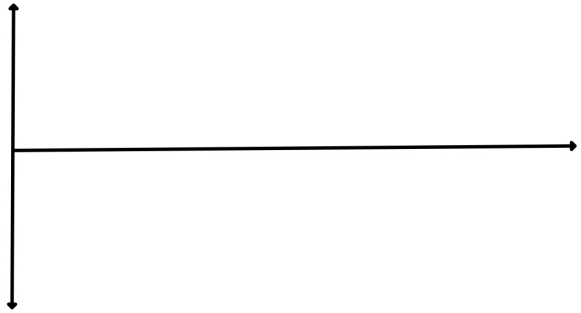
Sketch one period of the graph of
$y=3\sin\theta$

Label the coordinates of all x-intercepts, minimums, and maximums.



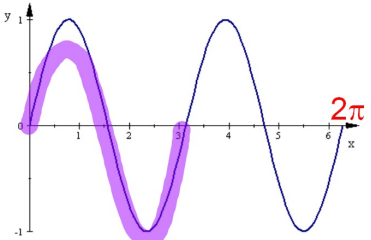
Sketch one period of the graph of
$y = -5\sin x$

Label the coordinates of all x-intercepts, minimums, and maximums.



Graph the following and describe what happens to the graph. $x[0,2\pi]$ $y[-1,1]$

1. $y = \sin(2\theta)$

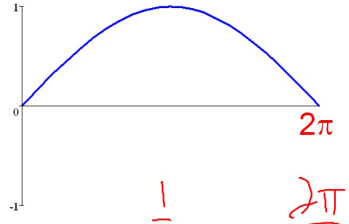


cycles = 2

b = 2

Period = π

2. $y = \sin(0.5\theta)$



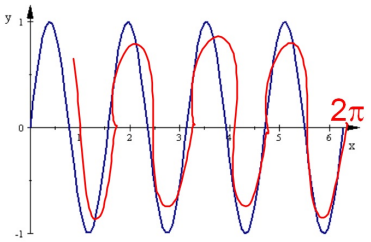
cycles = 1/2

$\frac{2\pi}{\frac{1}{2}} = 4$

b = 1/2

Period = 4π

3. y = sin(4θ)

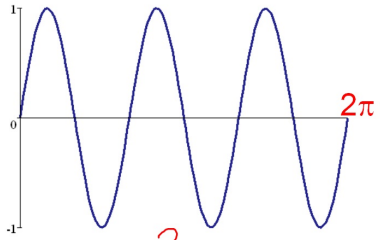


cycles = 4

b = 4

Period = $2\pi/4 = \pi/2$

4. y = sin(3θ)



cycles = 3

b = 3

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

Remember the period of y = sinx is 2π

1. y=sin2x $b = 2$ $Period = \pi$
2. y=sin$\frac{1}{2}$x $b = \frac{1}{2}$ $Period = 4\pi$
3. y= sin4x $b = 4$ $Period = \frac{\pi}{2}$
4. y=sin3x $b = 3$ $Period = \frac{2\pi}{3}$

Start With	b	End With
2π	2	π
2π	$\frac{1}{2}$	4π
2π	4	$\frac{\pi}{2}$
2π	3	$\frac{2\pi}{3}$

What is the relationship between b and the Period?

b = (2π)/Period

y = aSinbθ

notes

Amplitude = a

Period = $\frac{2\pi}{b}$

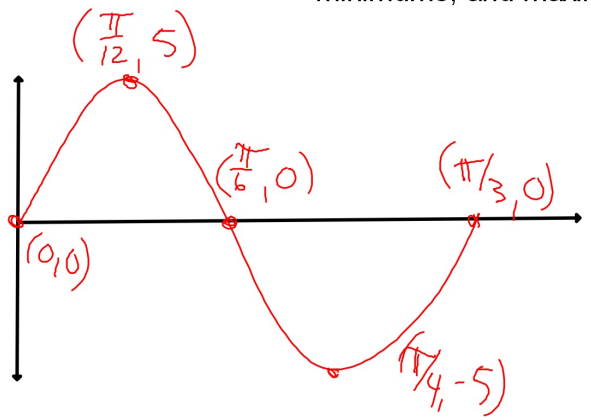
Midline: y = 0

Example

Sketch one period of the graph of

y= 5sin6x

Label the coordinates of all x-intercepts, minimums, and maximums.



Amplitude = 5

Period = $\frac{2\pi}{6} = \frac{\pi}{3}$

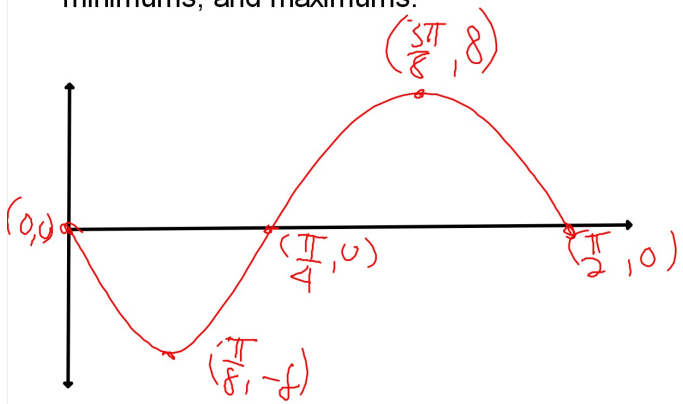
Sketch one period of the graph of

$y = -8\sin 4x$

Label the coordinates of all x-intercepts, minimums, and maximums.

Amplitude =

Period = $\frac{2\pi}{4} = \frac{\pi}{2}$



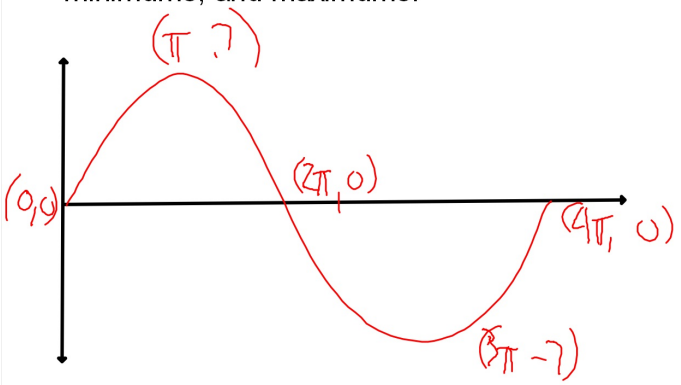
Sketch one period of the graph of

$y = 7\sin(\frac{x}{2}) \longrightarrow y = 7\sin(\frac{1}{2}x)$

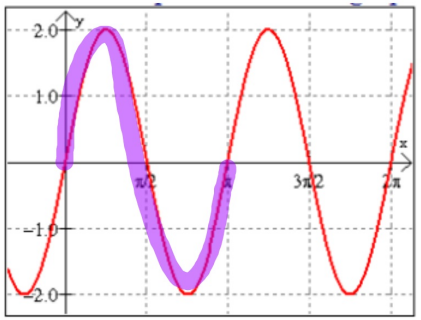
Label the coordinates of all x-intercepts, minimums, and maximums.

Amplitude =

Period = $\frac{2\pi}{\frac{1}{2}} = 4\pi$



Write the equation of this sine function as $y = a\sin bx$



Amplitude = 2

a= 2

$y = 2\sin 2x$

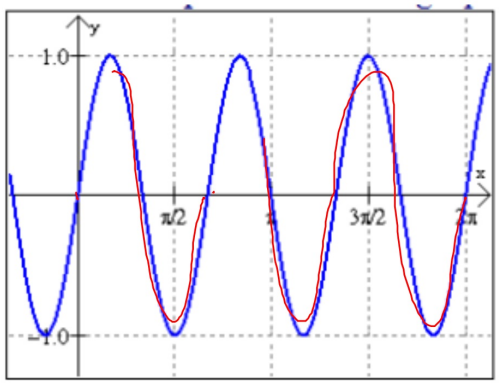
Period= $\pi = \frac{2\pi}{b}$

b= 2

Period = $\frac{2\pi}{b}$

b= $\frac{2\pi}{\text{Period}}$ or b= # of periods in 2π

Write the equation of this sine function.



$y = \sin 3x$

Amplitude = 1

Period = $\frac{2\pi}{3}$ $b = 3$

$b = \frac{2\pi}{\text{period}}$

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