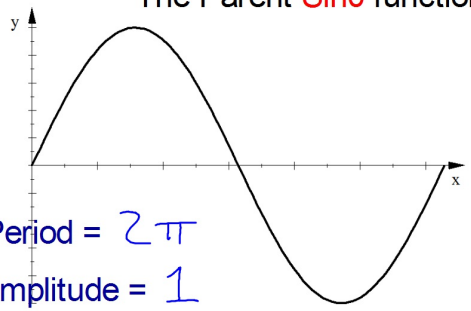
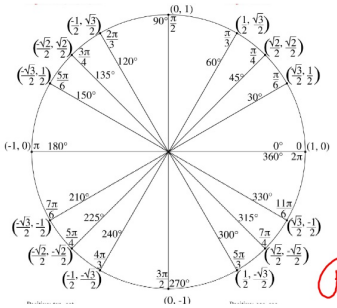
The Parent Sinθ function:





Period = 2π

Amplitude = 1

Midline: $y=0$

Max= 1 at $\theta = \pi/2$

Min= -1 at $\theta = 3\pi/2$

x-int at $\theta = 0, \pi, 2\pi$

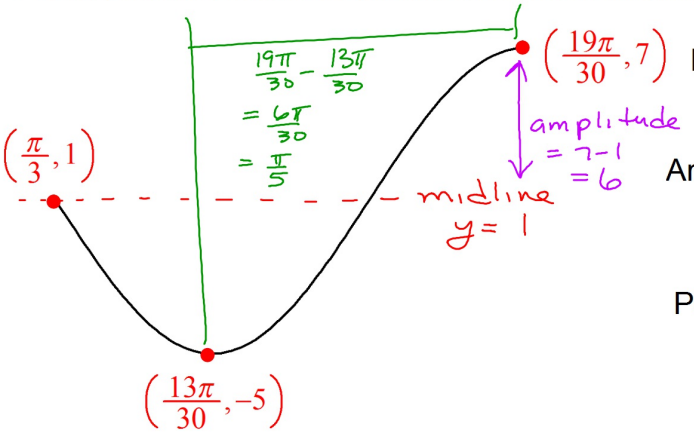
y-int when $\theta = 0$

Domain: $(-\infty, \infty)$ R

Range: $[-1, 1]$

$-1 \le y \le 1$

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



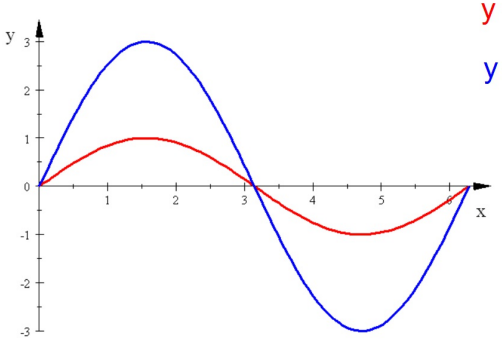
Eq of Midline: $y=1$

Amplitude: $= 6$

Period: $\frac{\pi}{5}$ over $\frac{1}{2}$

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

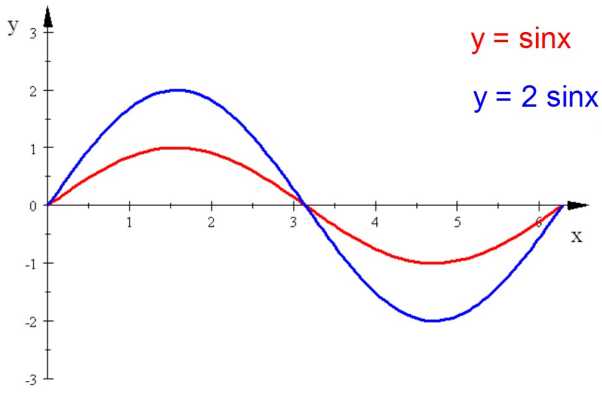
Graph of y=sinx Exploration

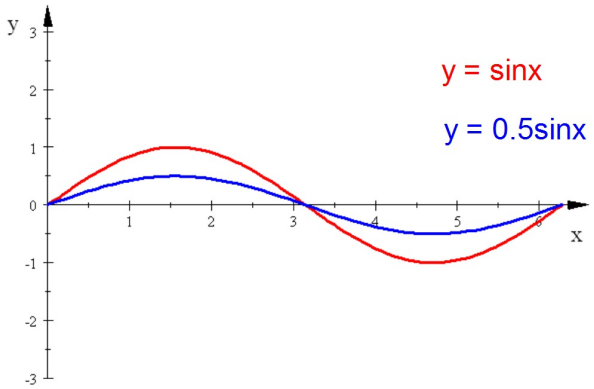


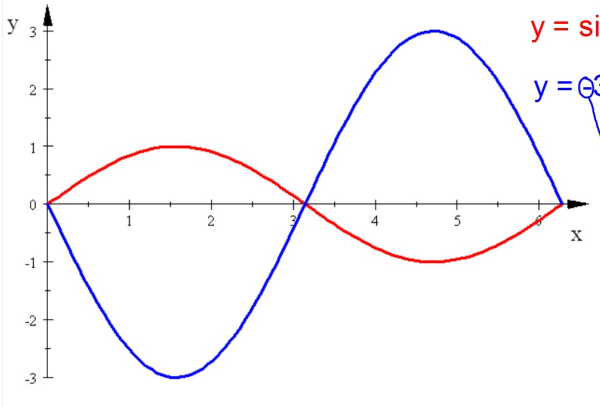
y = sinx

y = 3 sinx

3 times taller or Vertical Stretch factor 3







y = asinx

|a| = Amplitude (Vertical Stretch Factor)

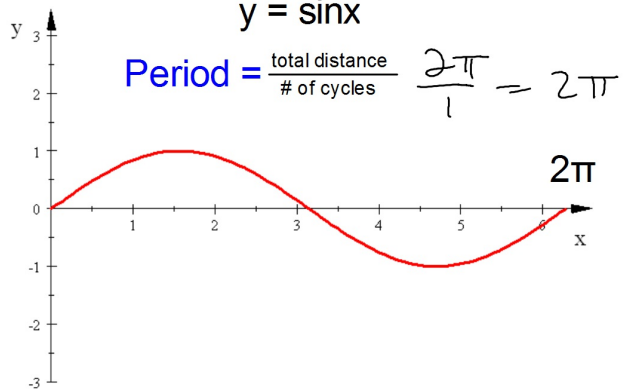
Can you have a negative Amplitude?

No, since amplitude is a distance, it can't be negative.

If a<0 then there is an x-axis reflection.
Upside down

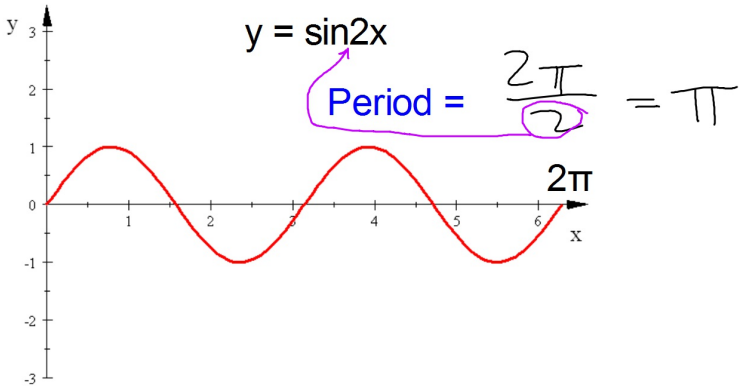
y = sinx

Period = $\frac{\text{total distance}}{\text{\# of cycles}}$ $\frac{2\pi}{1} = 2\pi$



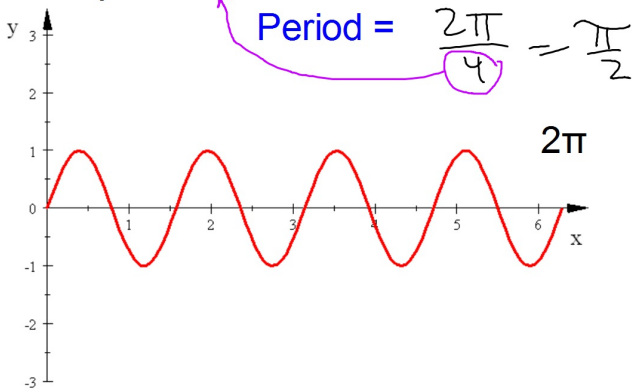
y = sin2x

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



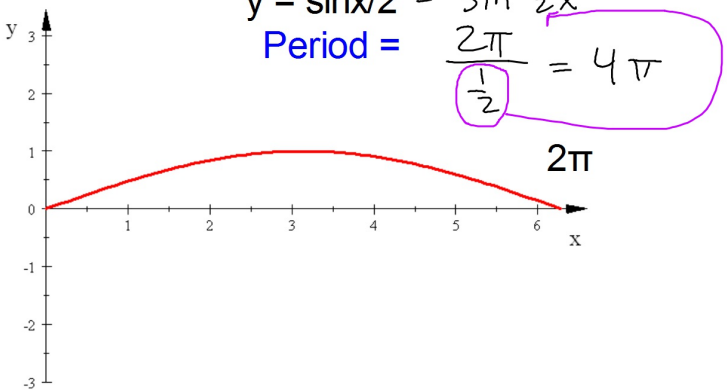
y = sin4x

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



y = sinx/2 = $\sin \frac{1}{2}x$

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



$y = \sin bx$

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

Find the amplitude and period for each Sine Function:

1. $y = 7\sin 5x$

Amplitude= 7

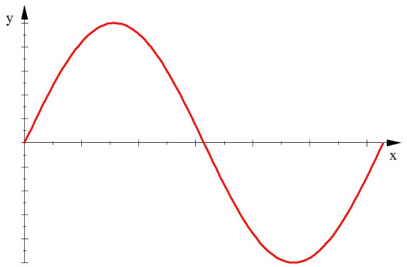
Period= $\frac{2\pi}{5}$

2. $y = -4\sin\frac{x}{3} = -4\sin\left(\frac{1}{3}x\right)$

Amplitude= 4

Period= $\frac{2\pi}{\frac{1}{3}} = 6\pi$

The Parent Function: y = Sinx



Period= 2π

Amplitude= 1

Eq of Midline: y = 0

y = asinbx

$|a|$= Amplitude

a<0 is an x-axis reflection (upside down)

b: ⟶ Period = $\frac{2\pi}{b}$

Sketch one period of the graph of y=3sin4x

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

this represents the distance from the beginning point to the end of one cyle.

Amplitude = 3

Midline: y=0

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