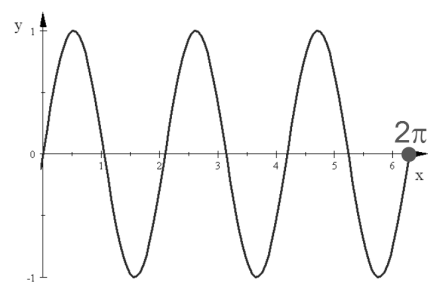


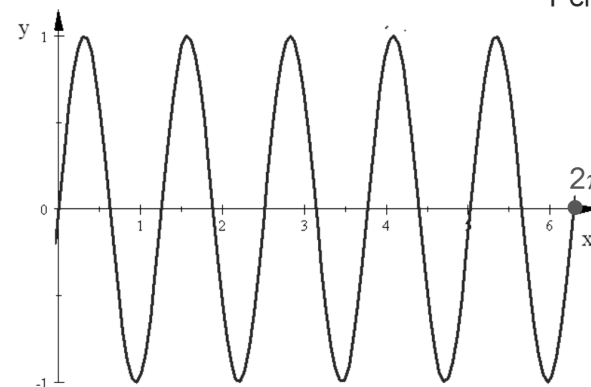
What is the period?



$$\text{Period} = \frac{\text{Total width}}{\# \text{ cycles}}$$

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

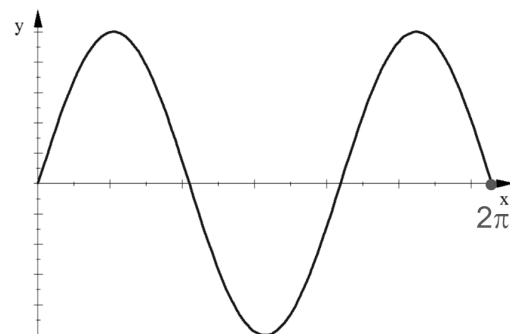
What is the period?



$$\text{Period} = \frac{\text{Total width}}{\# \text{ cycles}}$$

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

What is the period?

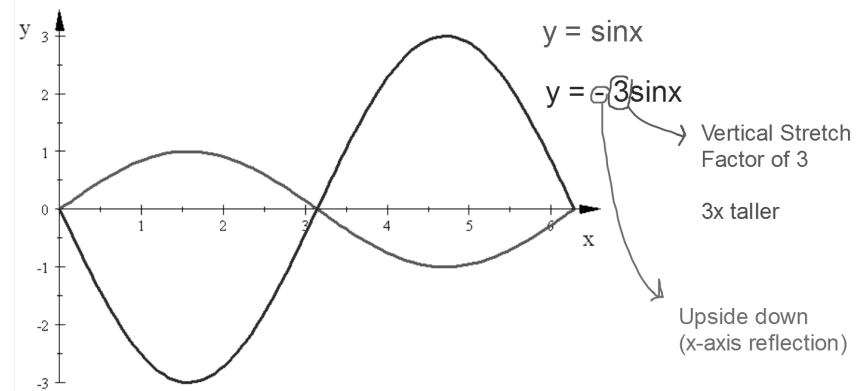
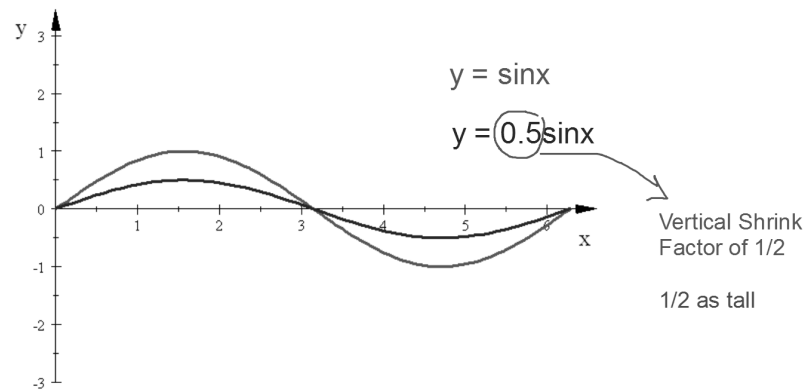
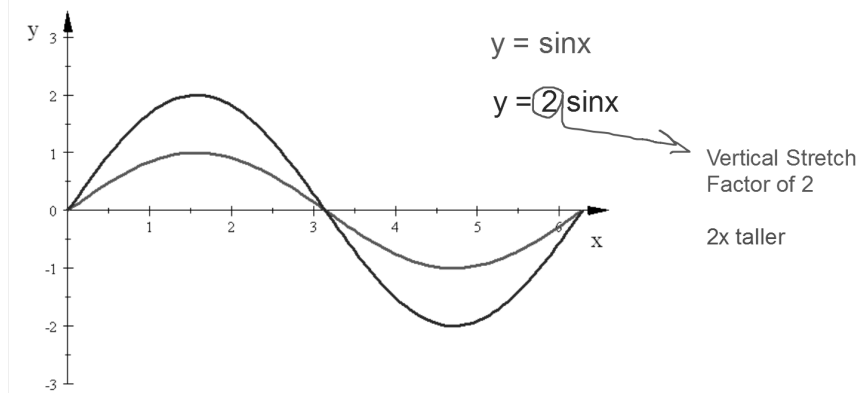
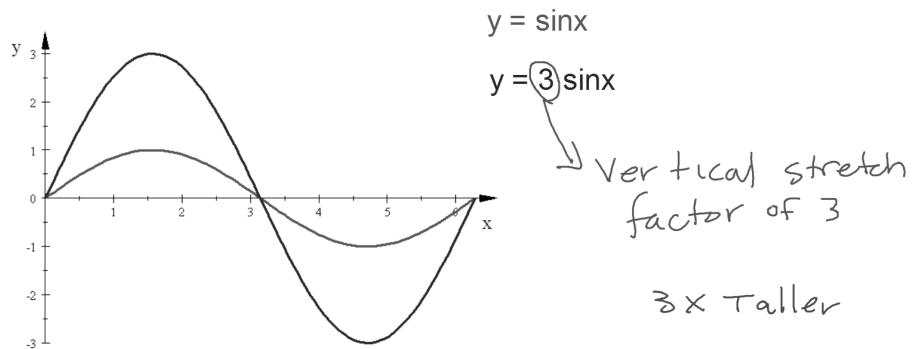


$$\text{Period} = \frac{\text{Total width}}{\# \text{ cycles}}$$

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

$$2\pi \cdot \frac{2}{3} = \boxed{\frac{4\pi}{3}}$$

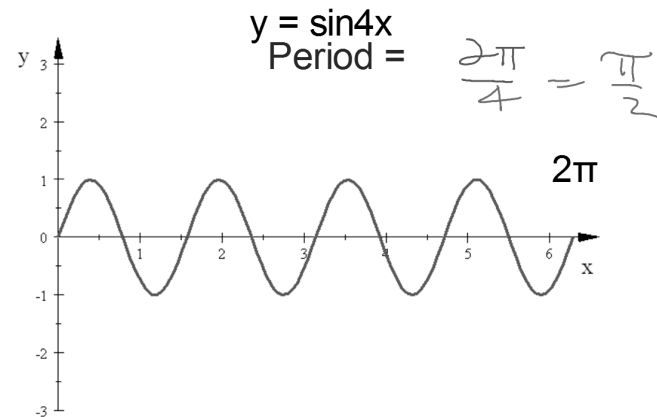
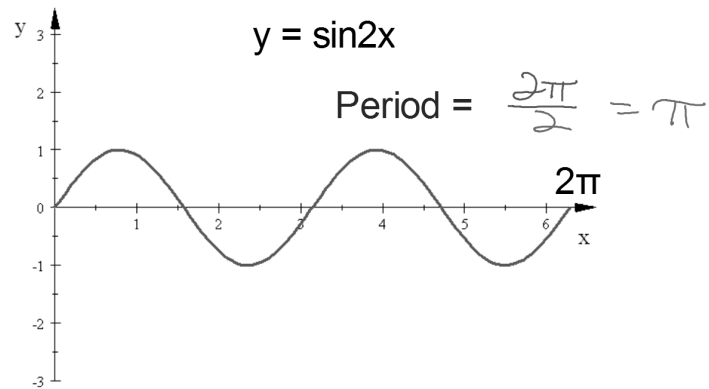
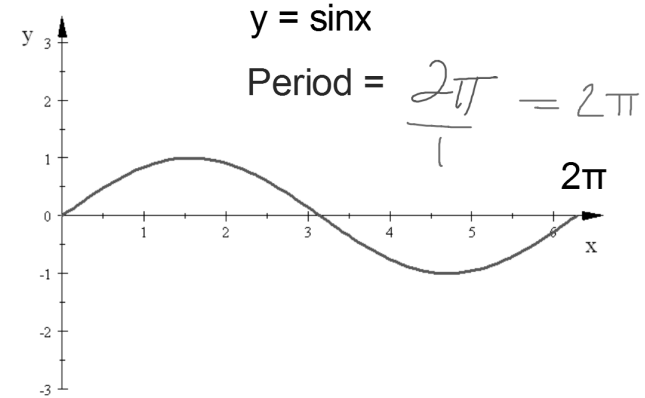
Graph of $y=\sin x$ Exploration

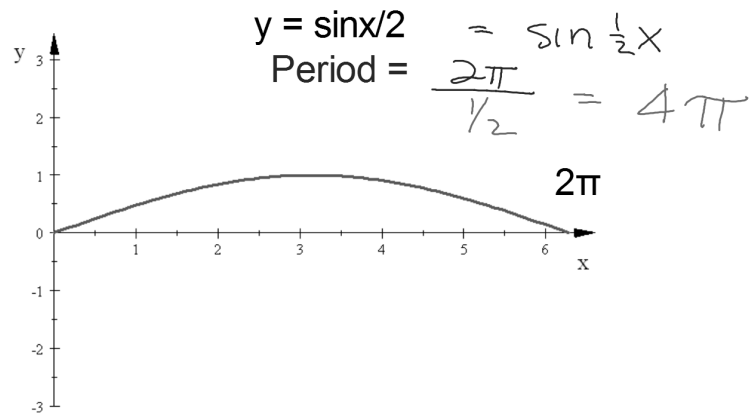


$$y = a \sin x$$

a = Amplitude (Vertical Stretch Factor)

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





$$y = \sin bx$$

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

Find the amplitude and period for each Sine Function:

1. $y = 7 \sin 5x$

Amplitude = 7

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

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

Amplitude = 4

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

$$y = a \sin bx$$

a = Amplitude

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

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

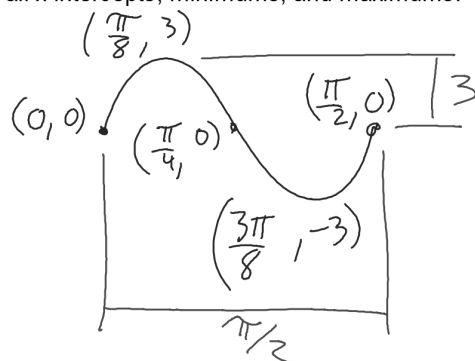
Sketch one period of the graph of

$$y = 3\sin 4x$$

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

$$\text{Amp} = 3$$

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



Sketch one period of the graph of

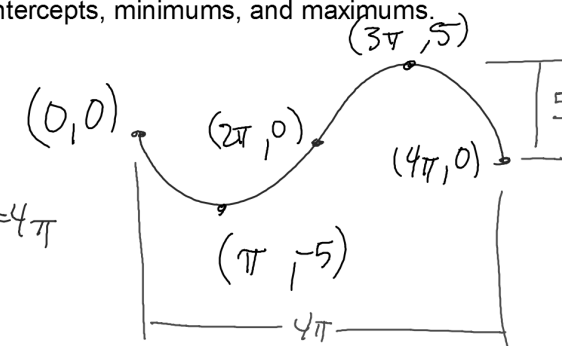
$$y = -5\sin\left(\frac{x}{2}\right)$$

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

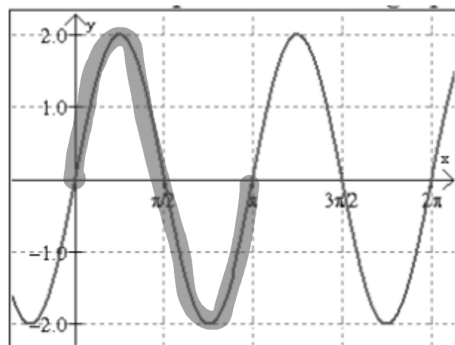
upside down

$$\text{Amp} = 5$$

$$\text{period} = \frac{2\pi}{1/2} = 4\pi$$



Write the equation of this sine function.



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

$b = \# \text{ of periods in } 2\pi$

$$\text{Amp} = 2$$

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

$$1 \text{ cycle} = 2\pi$$

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

$$b = 2$$

$$y = 2\sin(2x)$$