

$$y = a \sin bx$$

a = Amplitude (vertical Stretch or Shrink factor)

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

$$\text{Period} = \frac{2\pi}{b} \longrightarrow \text{also, } b = \frac{2\pi}{\text{Period}}$$

Find the amplitude and period for each Sine Function:

1. $y = 7 \sin 5x$

Amplitude = 7

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

2. $y = -4 \sin \frac{x}{3} = \frac{1}{3}x$

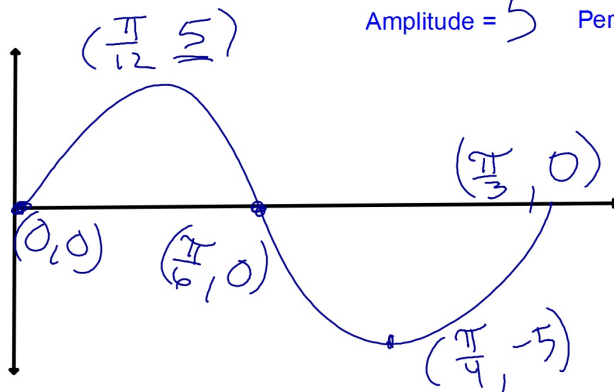
Amplitude = 4

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

Sketch one period of the graph of

$y = 5 \sin 6x$ Label the coordinates of all x-intercepts, minimums, and maximums.

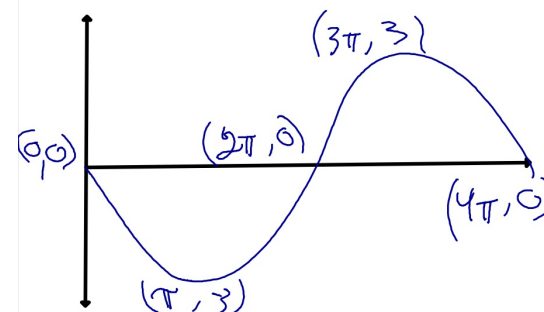
Amplitude = 5 Period = $\frac{2\pi}{6} = \frac{\pi}{3}$



Sketch one period of the graph of

$y = -3 \sin(\frac{x}{2})$ $b = \frac{1}{2}$ Amplitude = 3 Period = 4π

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

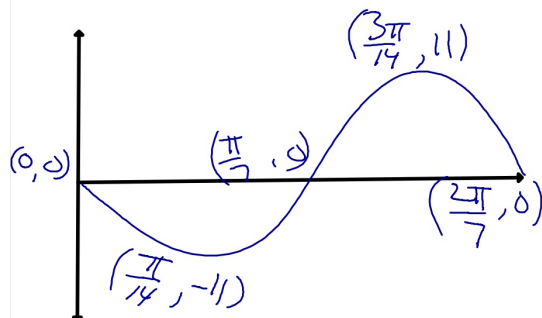


period = $\frac{2\pi}{b}$
 $= \frac{2\pi}{\frac{1}{2}} = 2\pi \cdot 2$
 $= 4\pi$

Sketch one period of the graph of

$$y = -11\sin(7x) \quad b=7 \quad \text{Amplitude} = 11 \quad \text{Period} = \frac{2\pi}{7}$$

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

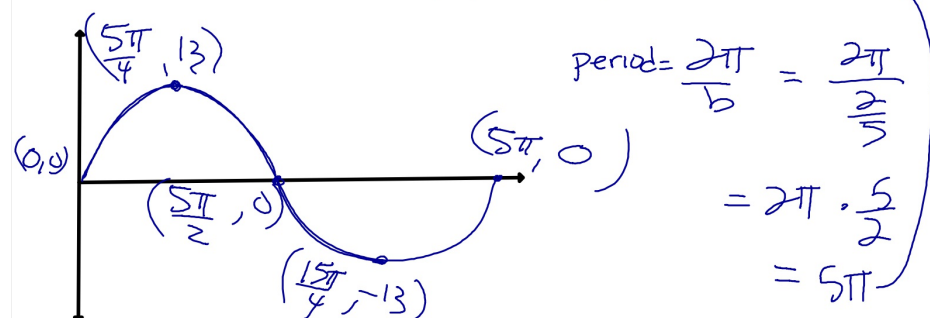


$$\text{period} = \frac{2\pi}{b} = \frac{2\pi}{7}$$

Sketch one period of the graph of

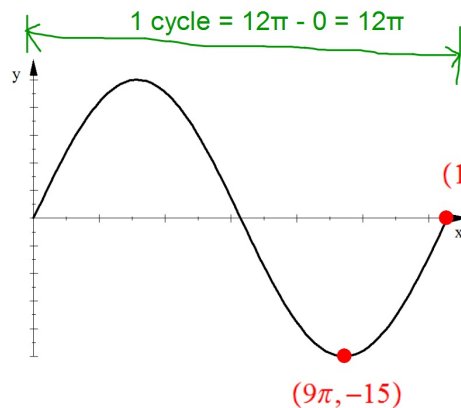
$$y = 13\sin(\frac{2x}{5}) \quad b=\frac{2}{5} \quad \text{Amplitude} = 13 \quad \text{Period} = 5\pi$$

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



$$\begin{aligned} \text{period} &= \frac{2\pi}{b} = \frac{2\pi}{\frac{2}{5}} \\ &= 2\pi \cdot \frac{5}{2} \\ &= 5\pi \end{aligned}$$

Write the equation of each Sin function.



$$1 \text{ cycle} = 12\pi - 0 = 12\pi$$

$$\begin{aligned} \text{Amp} &= 15 \\ \text{period} &= 12\pi \\ b &= \frac{2\pi}{12\pi} = \frac{1}{6} \end{aligned}$$

$$\begin{aligned} y &= 15\sin(\frac{1}{6}x) \\ \text{or } y &= 15\sin(\frac{x}{6}) \end{aligned}$$