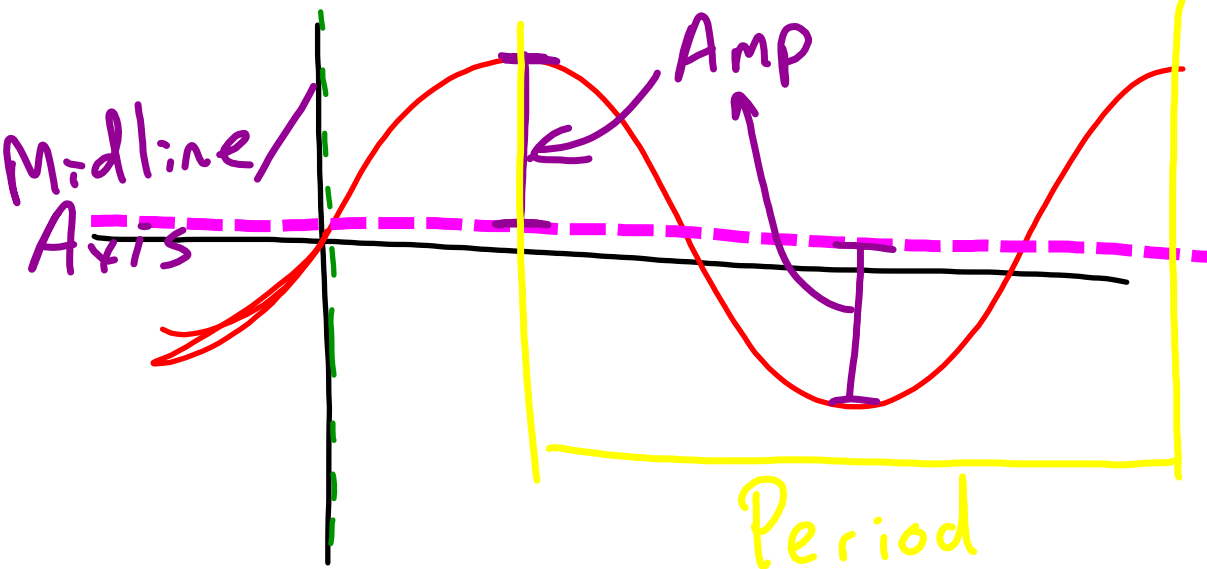


$$y = a \sin[k(x - d)] + c$$

Amplitude \nearrow
 $k = \frac{360}{\text{period}}$
 $= \frac{2\pi}{\text{period}}$
 $\therefore \text{period} = \frac{2\pi}{k}$

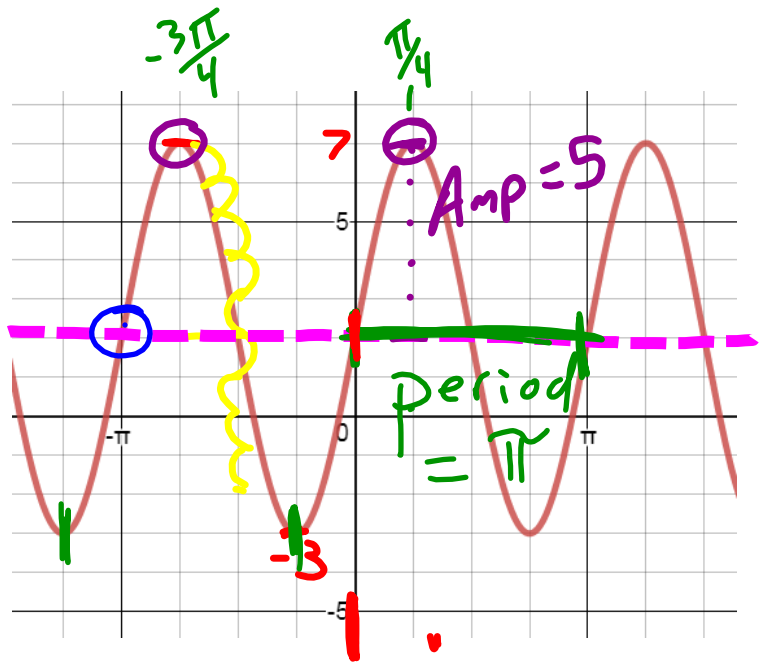
\downarrow phase shift
 Left/Right
 \uparrow up/down
 - Midline
 $y = c$



Determine an equation for the graph

$$\begin{aligned} \text{Midline} &= \frac{\text{Max} + \text{Min}}{2} \\ &= \frac{7 + (-3)}{2} \\ &= 2 \end{aligned}$$

$$y = 2$$



$$\begin{aligned} \text{Amp} &= \frac{\text{Max} - \text{Min}}{2} \\ &= \frac{7 - (-3)}{2} \\ &= 5 \end{aligned}$$

$$y = a \sin[k(x-d)] + c$$

$$y = 5 \sin[2(x)] + 2$$

$$y = 5 \sin[2(x + \pi)] + 2$$

$$y = 5 \cos\left[2\left(x - \frac{\pi}{4}\right)\right] + 2$$

$$y = 5 \cos\left[2\left(x + \frac{3\pi}{4}\right)\right] + 2$$

$$\begin{aligned} \text{K value} &= \frac{2\pi}{\pi} \\ &= 2 \end{aligned}$$

Graph one cycle of $2 \sin \left(\frac{1}{2} (x - \pi) \right) - 1$

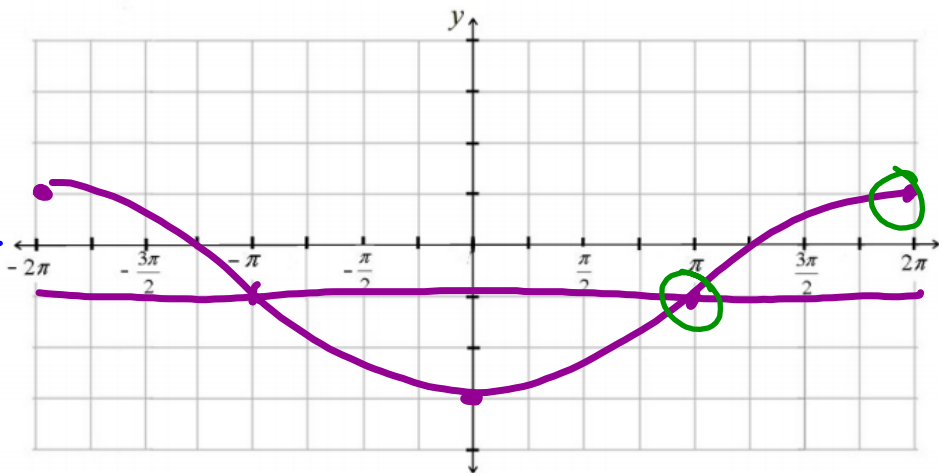
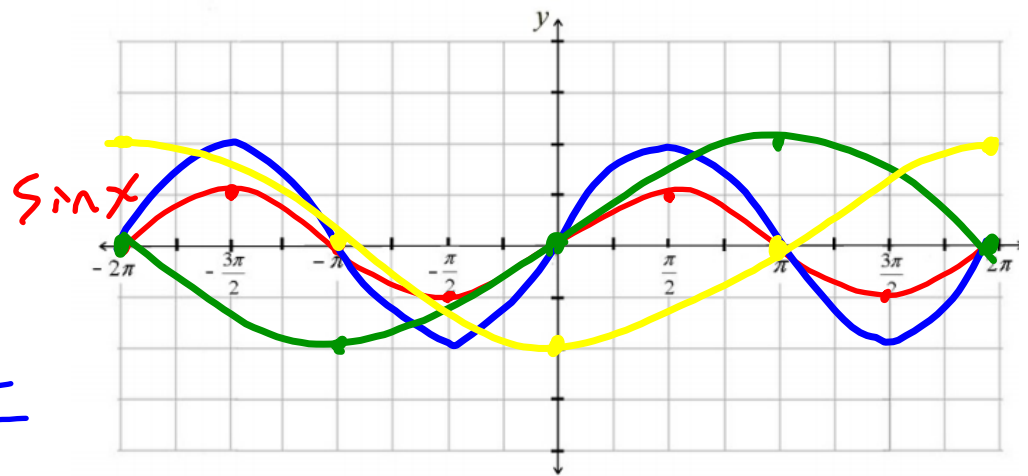
Amp = 2

Mid line
 $y = -1$

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

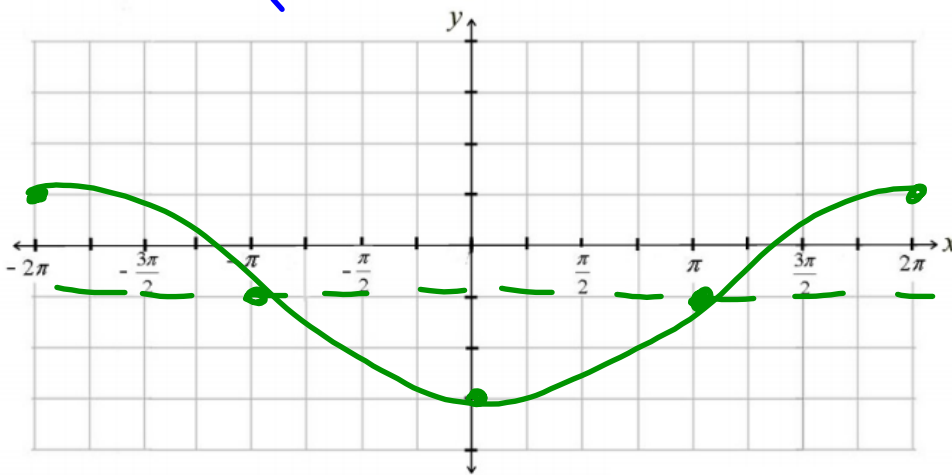
Phase Shift

π units Right



Graph one cycle of $2 \sin \left(\frac{1}{2} (x - \pi) \right) - 1$

$(x, y) \rightarrow \left(\frac{x}{k} - d, ay + c \right)$ a k d c



$\sin x$

x	y
0	0
$\frac{\pi}{2}$	1
π	0
$\frac{3\pi}{2}$	-1
2π	0



$2 \sin \left(\frac{1}{2} (x - \pi) \right) - 1$

$2x + \pi$	$2y - 1$
π	-1
2π	1
3π	-1
4π	-3
5π	1

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