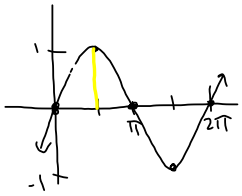
7.1 Graphing Sine and Cosine

Amplitude

$y = 1 \sin x$



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

Amplitude: 2 Amplitude: $\frac{1}{2}$

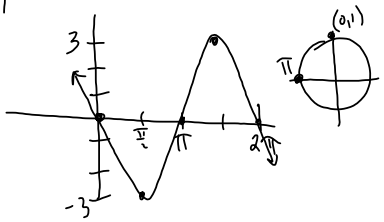
$y = -3 \sin x$

Amplitude: 3

Graph.

$y = -3 \sin x$

Amplitude: 3



Period: Sine & cosine 2π

$y = \sin x$ period 2π

$y = \sin 2x$ period π $\frac{2\pi}{b}$

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

$y = \cos 4x$ Period $\frac{2\pi}{4} = \frac{\pi}{2}$ or $\frac{1}{2}\pi$

$y = \cos \frac{1}{2}x$ Period $\frac{2\pi}{\frac{1}{2}} = 4\pi$

$2 \div \frac{1}{2} = 2 \cdot \frac{2}{1} = 4$

$y = -\frac{1}{2} \cos 3x$

Amplitude: $\frac{1}{2}$

Reflected: x-axis

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

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

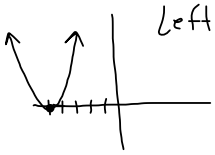
4

No

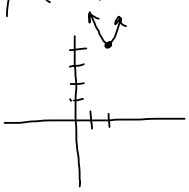
6π

$y = (x+5)^2$

Left 5



$y = (x-2)^2 + 4$



$y = \sin\left(x + \frac{\pi}{2}\right) - 3$

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

$y = \cos\left(x - \frac{\pi}{4}\right) + 6$

Right $\frac{\pi}{4}$ Up 6

$y = 2\cos\left(x + \frac{\pi}{2}\right) - 3$

Amp: 2 (vertical stretch by 2)

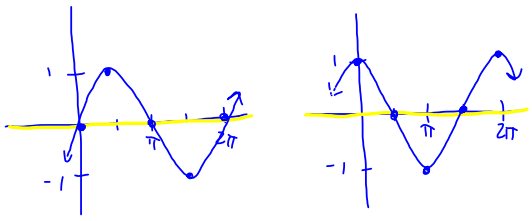
Period: 2π

Reflection: None

Phase shift: Left $\frac{\pi}{2}$

Vertical shift: Down 3

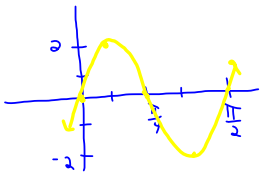
$y = \sin x$ vs. $y = \cos x$



$y = 2\sin 4x$

Amp: 2 Period: $\frac{2\pi}{b} = \frac{2\pi}{4} = \frac{\pi}{2}$

Midline: x-axis



$y = -\frac{1}{2}\cos x + 4$

Amp: $\frac{1}{2}$ (vertical shrink by $\frac{1}{2}$)

Period: 2π

Midline: up 4