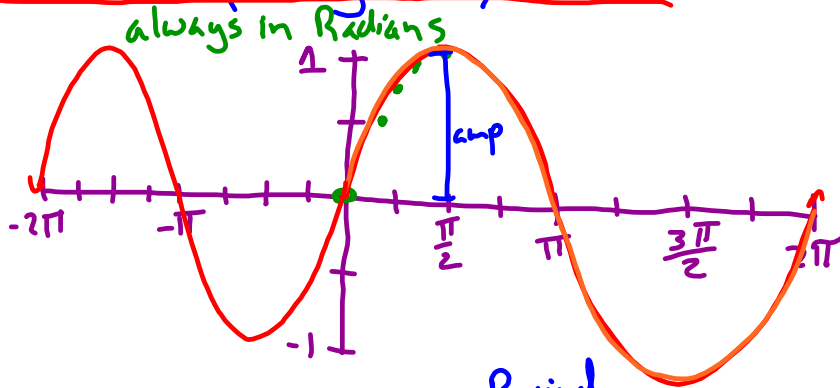


Section 4.4: Graphing Sin/Cos

$y = \sin(x)$

x	y
0	0
$\pi/6$	$1/2$
$\pi/4$	$\sqrt{2}/2 = .7$
$\pi/3$	$\sqrt{3}/2 = .85$
$\pi/2$	1



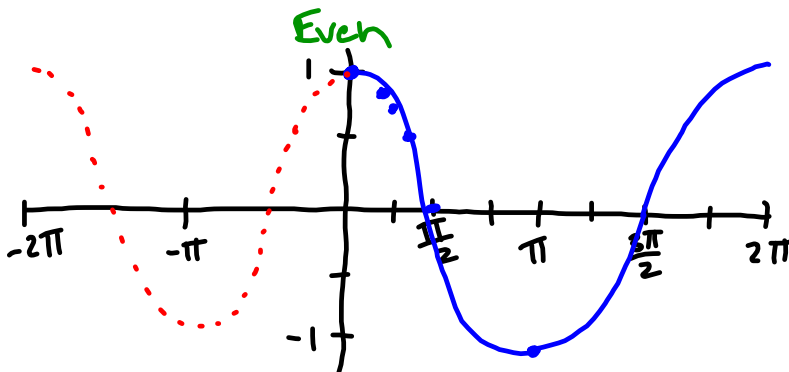
Sine wave

1 cycle = 2π

Amplitude: 1 mid line \rightarrow max
 \rightarrow min

$y = \cos(x)$

x	y
0	1
$\pi/6$	$\sqrt{3}/2 = .85$
$\pi/4$.7
$\pi/3$	$1/2$
$\pi/2$	0



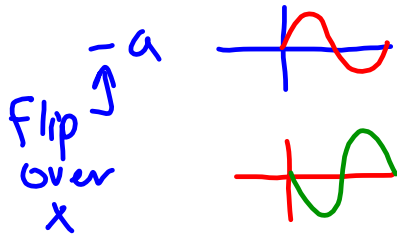
$\sin(x) + 90^\circ = \cos x$

cosine is 90° out of phase

Amplitude:

$$y = \underline{a} \sin(x) \quad \text{or} \quad y = \underline{a} \cos(x)$$

$|a| = \text{amplitude}$



reflection

$$y = 3 \sin(x)$$

$$\text{amp} = 3$$

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

$$\text{amp} = \frac{1}{2}$$

Period

Period = wave length standard = 2π
distance between repeated points

$$y = \sin(bx)$$

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

Find the Period:

$$\text{a) } y = \sin 2x \quad \text{Per} = \frac{2\pi}{b} = \frac{2\pi}{2} = \pi$$

$$\text{b) } y = 5 \cos \frac{x}{2} \quad \text{Per} = \frac{2\pi}{1/2} = 4\pi$$

$$\text{c) } y = \frac{1}{2} \sin \frac{\pi}{4} x \quad \text{Per} = \frac{2\pi}{\pi/4} = 8$$

$$\text{frequency} = \frac{1}{\text{period}} = \frac{b}{2\pi}$$