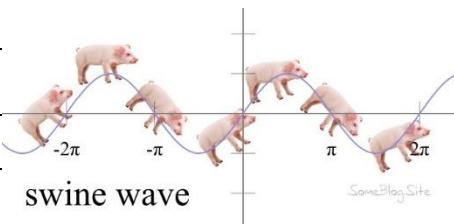


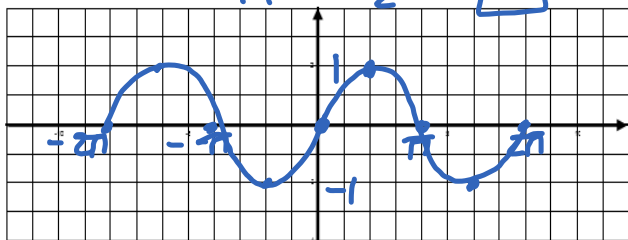
# 8.2 Sine and Cosine Curves

HW p. 305 #1-20 (Get some GRAPH PAPER!!!)



1. a) Sketch the graph of  $y = \sin x$

$Pd = 2\pi$   
 $A = \frac{1 - (-1)}{2} = 1$

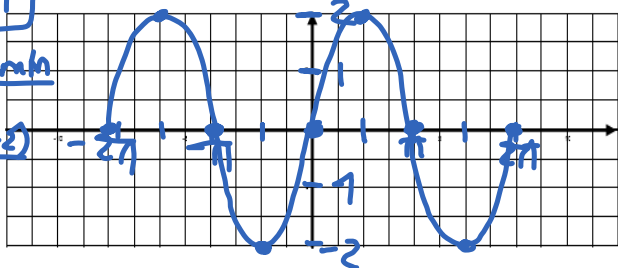


**Amplitude:** Half the distance between the max and min.  
 $A = \frac{\text{Max} - \text{Min}}{2}$

**Period:** How long it takes to complete one cycle

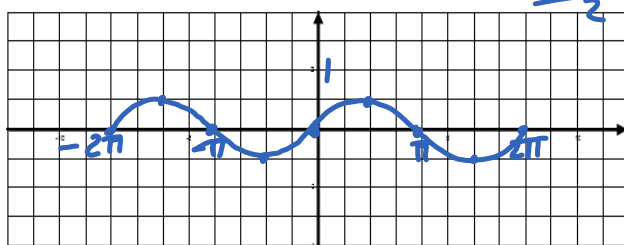
b)  $y = 2 \sin x$  \* Double y-values

$Pd = 2\pi$   
 $A = \frac{\text{Max} - \text{min}}{2}$   
 $A = \frac{2 - (-2)}{2} = 2$



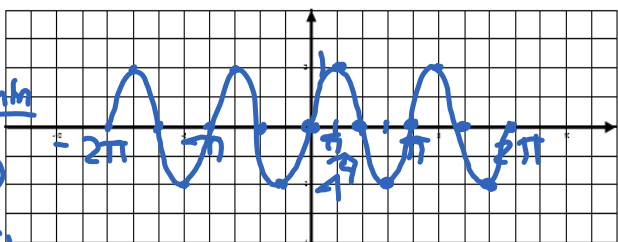
c)  $y = \frac{1}{2} \sin x$

$Pd = 2\pi$      $A = \frac{\frac{1}{2} - (-\frac{1}{2})}{2} = \frac{1}{2}$



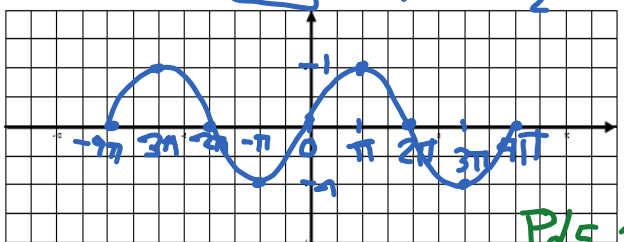
d)  $y = \sin 2x$  \* Half x-values

$Pd = \pi$   
 $A = \frac{\text{Max} - \text{min}}{2}$   
 $A = \frac{1 - (-1)}{2} = 1$



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

\* Doubles Period  
 $Pd = 4\pi$      $A = \frac{1 - (-1)}{2} = 1$



**Period + Amplitude**     $y = A \sin Bx$   
 $y = A \cos Bx$

**Amplitude =**  $|A|$

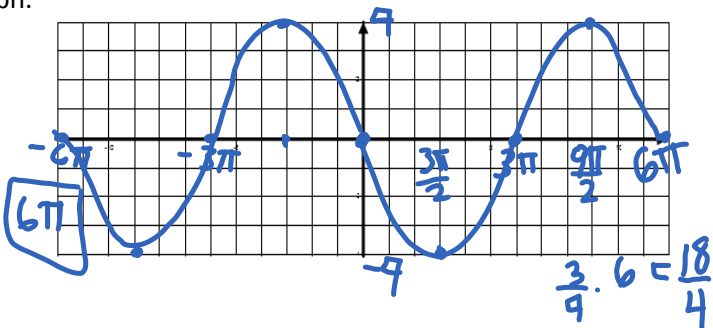
**Period =**  $\frac{2\pi}{B}$  or  $\frac{1}{B} \cdot 2\pi$  or  $B = \frac{2\pi}{Pd}$  \* Memorize



2. Give Amplitude, Period, and Sketch the graph.

a)  $y = -4 \sin \frac{x}{3}$      $B = \frac{1}{3}$

$A = |-4| = 4$   
 $Pd = \frac{2\pi}{\frac{1}{3}} = 2\pi \cdot 3 = 6\pi$   
 \* reflect thru  $\frac{1}{3}$  x-axis

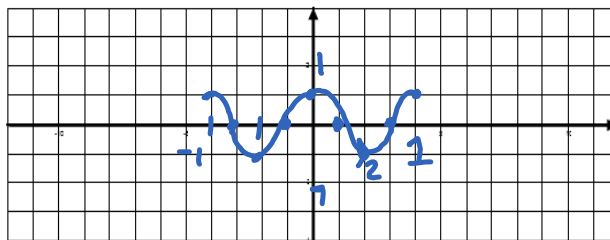


## 8.2 Sine and Cosine Curves

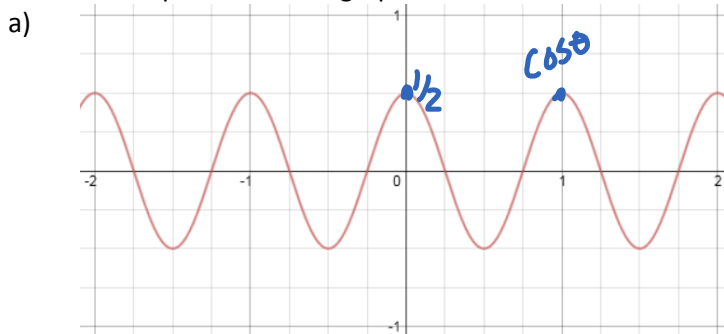
b)  $y = \frac{1}{2} \cos 2\pi x$

$$A = \left| \frac{1}{2} \right| = \frac{1}{2}$$

$$Pd = \frac{2\pi}{B} = \frac{2\pi}{2\pi} = 1$$



3. Write an equation for the graph in terms of SINE and COSINE!!!!

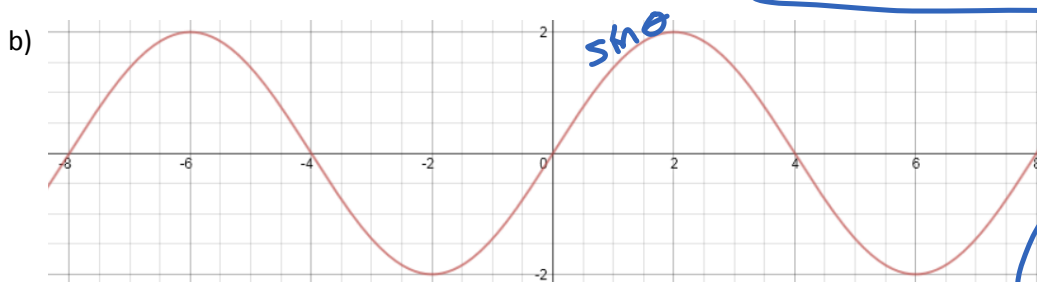


$$A = \frac{1}{2}$$

$$Pd = 1$$

$$B = \frac{2\pi}{Pd} = \frac{2\pi}{1} = 2\pi$$

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



$$A = 2$$

$$Pd = 8$$

$$B = \frac{2\pi}{Pd} = \frac{2\pi}{8} = \frac{\pi}{4}$$

$$y = 2 \sin \frac{\pi}{4} x$$

ELECTRICITY

frequency -  $\frac{1 \text{ v/s}}{\text{week}}$        $\frac{2 \text{ v/s}}{\text{week}}$       the # of cycles completed per unit of time  $\left( \frac{\text{cycles}}{\text{sec}} \right)$

Hertz -  $\frac{\text{cycles}}{\text{sec}}$

4. Find the period of an electrical pulse measured at 60 Hz. =  $60 \frac{\text{cycles}}{\text{sec}}$

$$Pd = \frac{1}{60} \text{ sec}$$

$$\text{Period} = \frac{1}{\text{frequency}}$$

