

EQ:

➤ Recall: Transformations of Graphs of Functions

Given  $y = f(x)$  transformed function  $y =$  \_\_\_\_\_

Where:

$a \rightarrow$  \_\_\_\_\_

$b \rightarrow$  \_\_\_\_\_

$h \rightarrow$  \_\_\_\_\_

$k \rightarrow$  \_\_\_\_\_

➤ Standard Form of Sine and Cosine Equations:  $y =$  \_\_\_\_\_

$y =$  \_\_\_\_\_

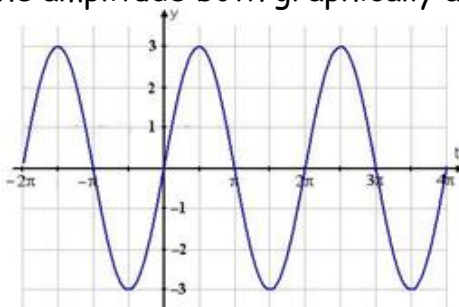
- Amplitude --- represented by \_\_\_\_\_; notation \_\_\_\_\_; measured from the \_\_\_\_\_ line of \_\_\_\_\_.

Graphically --- distance from \_\_\_\_\_ line of symmetry to \_\_\_\_\_ or \_\_\_\_\_

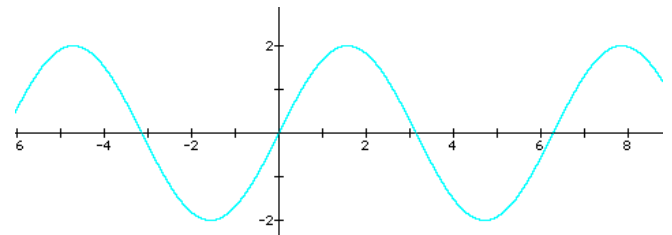
Algebraically ---

Find the amplitude both graphically and algebraically. Write the function represented by the graph.

Ex 1.



Ex. 2



Graphically = \_\_\_\_\_  
Algebraically = \_\_\_\_\_  
 $y =$  \_\_\_\_\_

Graphically = \_\_\_\_\_

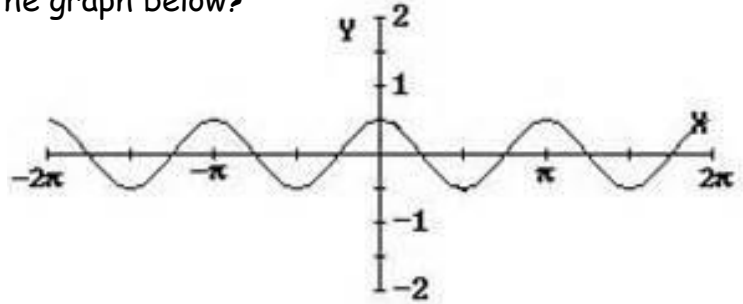
Graphically = \_\_\_\_\_  
Algebraically = \_\_\_\_\_  
 $y =$  \_\_\_\_\_

- New Period --- complete \_\_\_\_\_ on \_\_\_\_\_; or \_\_\_\_\_ using \_\_\_\_\_ from equation

RECALL: Sine and Cosine cycle every \_\_\_\_\_° or \_\_\_\_\_ radians.

Ex 3. What is the amplitude and new period for the graph below?

|A| =



Use graph to determine B.

B = \_\_\_\_\_

Identify \_\_\_\_\_ points, then determine the period of the graph. NP= \_\_\_\_\_

$$y = \_ \cos (\_ x)$$

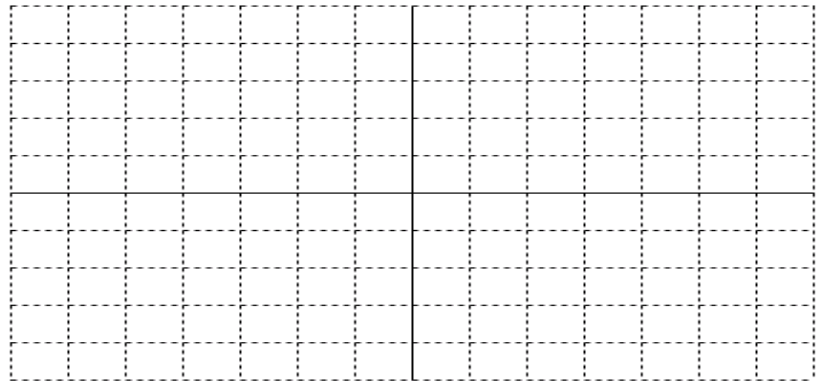
Use amplitude and new period to graph the equation.

Ex 4.  $y = 3\cos(\frac{1}{2}x)$  A = \_\_\_\_\_ B = \_\_\_\_\_

Calculate New Period:

Where are 4 consecutive critical points?

\_\_\_\_\_



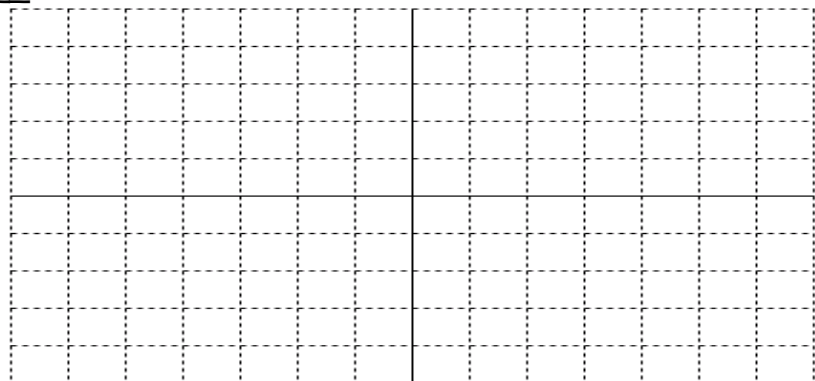
Ex 5.  $y = -4\cos(\pi x)$  A = \_\_\_\_\_ B = \_\_\_\_\_

Calculate New Period:

What intervals should you use on the x-axis?

Where are 4 consecutive critical points?

\_\_\_\_\_



$$y = A \sin [B(x - C)] + D$$

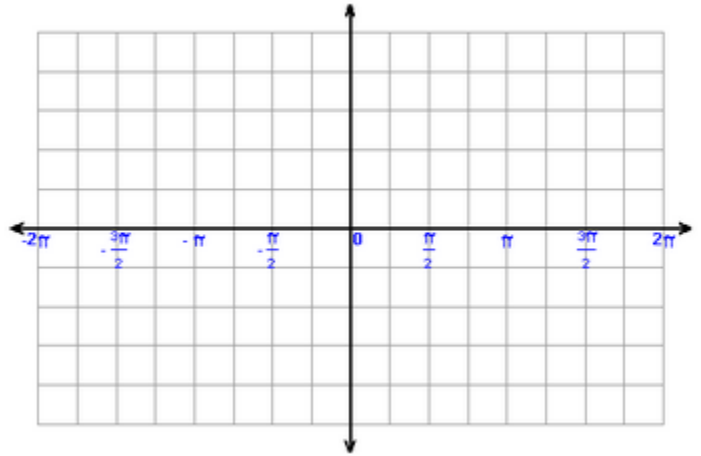
$$y = A \cos [B(x - C)] + D$$

- Phase Shift (horizontal) --- represented by \_\_\_\_\_
- Vertical Shift --- represented by \_\_\_\_\_

Based on your knowledge of transformations, answer these questions about each equation.

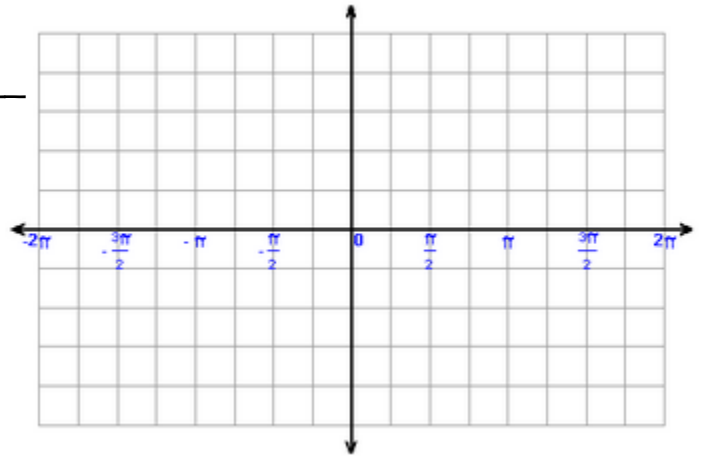
6.  $y = \sin(x - \pi/4)$

- How is this graph transformed? \_\_\_\_\_
- What happens to the x-value? \_\_\_\_\_
- What about the y-value? \_\_\_\_\_
- Has the period changed? \_\_\_\_\_
- Has the maximum value changed? \_\_\_\_\_
- Has the minimum value changed? \_\_\_\_\_



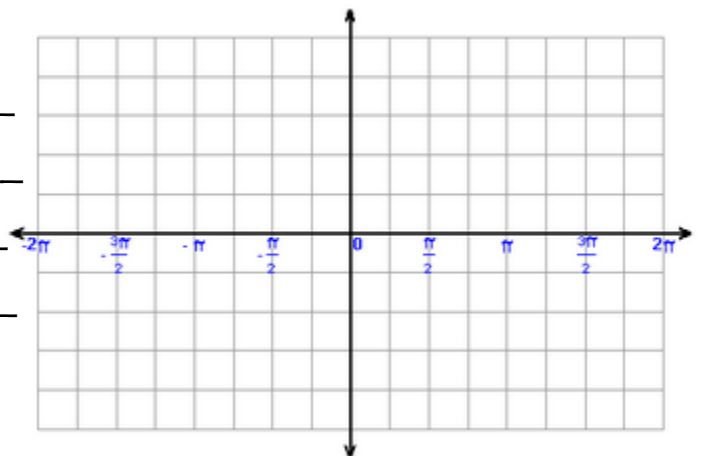
7.  $y = -\sin(x) + 2$

- How is this graph transformed? \_\_\_\_\_
- What happens to the x-value? \_\_\_\_\_
- What about the y-value? \_\_\_\_\_
- Has the period changed? \_\_\_\_\_
- Has the maximum value changed? \_\_\_\_\_
- Has the minimum value changed? \_\_\_\_\_



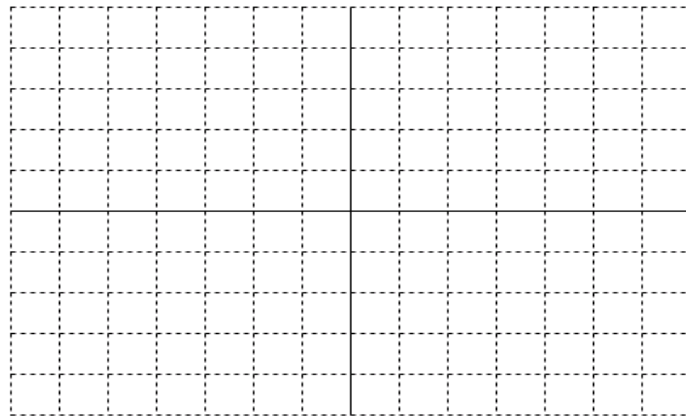
8.  $y = 2\cos(x + \pi/2) - 1$

- How is this graph transformed? \_\_\_\_\_
- \_\_\_\_\_
- What happens to the x-value? \_\_\_\_\_
- What about the y-value? \_\_\_\_\_
- Has the period changed? \_\_\_\_\_
- Has the maximum value changed? \_\_\_\_\_
- Has the minimum value changed? \_\_\_\_\_



9.  $y = \cos(3x)$

- How is this graph transformed? \_\_\_\_\_
- What happens to the x-value? \_\_\_\_\_
- What about the y-value? \_\_\_\_\_
- Has the period changed? \_\_\_\_\_
- What are the new critical points? \_\_\_\_\_
- Has the maximum value changed? \_\_\_\_\_
- Has the minimum value changed? \_\_\_\_\_



NP = \_\_\_\_\_

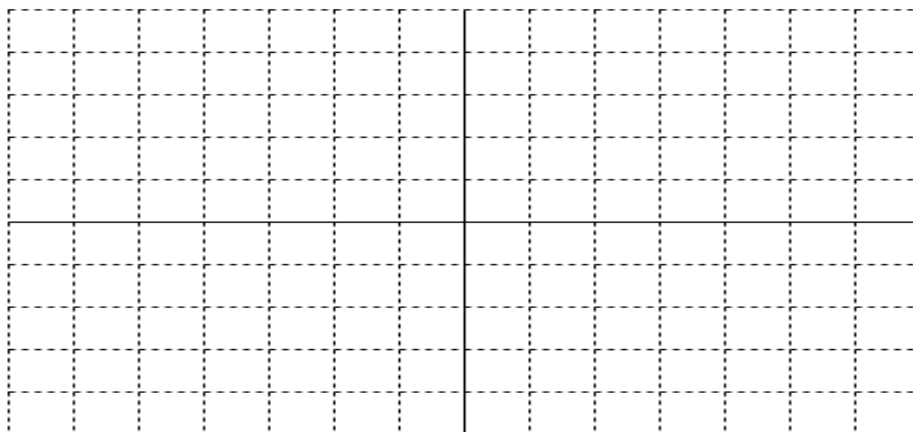
❖ Use amplitude, new period, phase shift, and vertical shift to graph the equation.

Ex 10.  $y = -2\sin(2x - \pi) + 1$  must rewrite as  $y =$  \_\_\_\_\_

A = \_\_\_\_\_ B = \_\_\_\_\_ C = \_\_\_\_\_ D = \_\_\_\_\_

Amplitude = \_\_\_\_\_ Reflect Across x-axis? \_\_\_\_\_ NP = \_\_\_\_\_ Critical Pts = \_\_\_\_\_

Phase Shift = \_\_\_\_\_ Vertical Shift = \_\_\_\_\_



- Assignment: PW #1 Graphing Sine and Cosine
- PW #2 Writing Equations of Sine and Cosine
- PW #3 Graphing Sine and Cosine