

## PC 5-4 Graphs of Trigonometric Functions

### Vertical and Horizontal Shifts:

1) What do you look for in the equation to determine if a graph is shifted horizontally?

2) What do you look for in the equation to determine if the a graph is shifted vertically?

3) Suppose you see a graph of a sine or cosine wave. How can you tell if it has been shifted horizontally? What specifically do you look for?

4) Suppose you see a graph of a sine or cosine wave. How can you tell if it has been shifted vertically? What specifically do you look for?

### Amplitude Change

5) Suppose you see a graph of a sine or cosine wave. What do you look for to determine the amplitude?

6) Which part of the equation shows you what the amplitude is? Provide an example.

7) Can amplitude be negative? Why/Why Not?

### Period Change

8) The period of  $y = \sin(x)$  and  $y = \cos(x)$  is  $2\pi$ . Explain how this is determined.

9) Which part of the equation determines how the period is changed?

**10)** Suppose you see a graph of a sine or cosine wave. How can you tell if the period has been changed? What specifically do you look for?

**11)** Let  $y = 5 \cos\left(8\left(x - \frac{\pi}{4}\right)\right) + 12$ . How do you determine what the x-axis should look like? What are the intervals on which the graph changes?