Sketch a graph of the following. State the amplitude, period, vertical shift and phase shift.

Example 1: 
$$y = 4cos\left[\frac{1}{2}\left(\theta - \frac{\pi}{3}\right)\right] - 6$$

Amp:\_\_\_\_\_ Period:\_\_\_\_\_ V.S.\_\_\_\_ P. S.\_\_\_\_

Example 2: 
$$y = 3 + 2sin\left[2\left(\theta + \frac{\pi}{2}\right)\right]$$

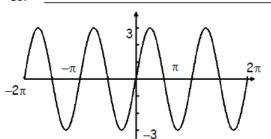
Amp:\_\_\_\_\_ Period:\_\_\_\_\_ V.S.\_\_\_\_ P. S.\_\_\_\_

## To write an equation from a graph:

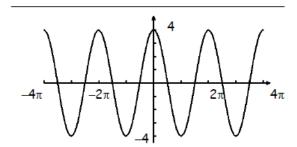
- 1. Find Amplitude
- 2. Identify the period from graph and then solve to find b
- 3. Find the vertical translation (sketch midline)
- 4. Write a sine or cosine function depending on the phase shift.

**Example 3:** Write an equation (sine and cosine) for the graph.

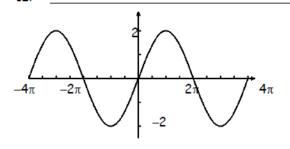
10.



11.



12.



13.

