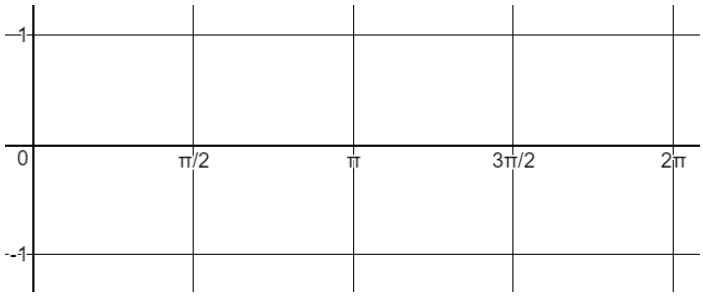
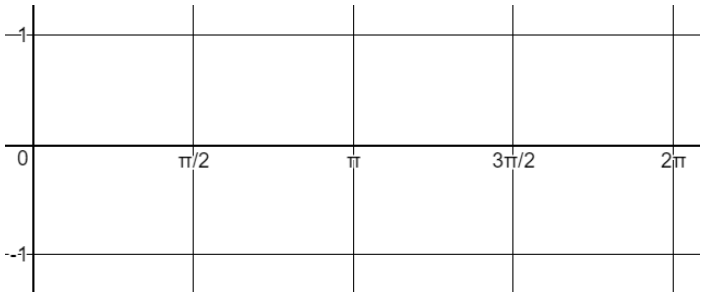
Name: _____ Date: _____ Per: _____

UNIT Review 4.3 – Graphing/Applying Sin and Cos Functions – PreCalc. --- Mr. Barsotti

1.) Graph **one cycle** of $y = \sin\theta$



2.) Graph **one cycle** of $y = \cos\theta$



Find all the unknowns. Then set the *x* and *y* axis up for each graph and label accurately with simplified units. Then **plot at least one cycle** of the function. *Write the x-axis labels below the coordinate grids and y-axis labels to the left.*

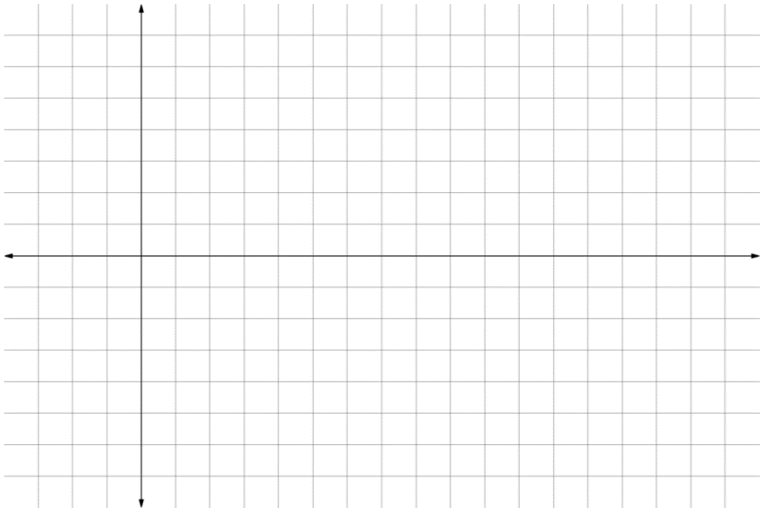
3.) $y = -5\cos 2\theta$

Amplitude = _____

Reflection? **Yes / No** *(circle one)*

Period = _____

Midline: _____



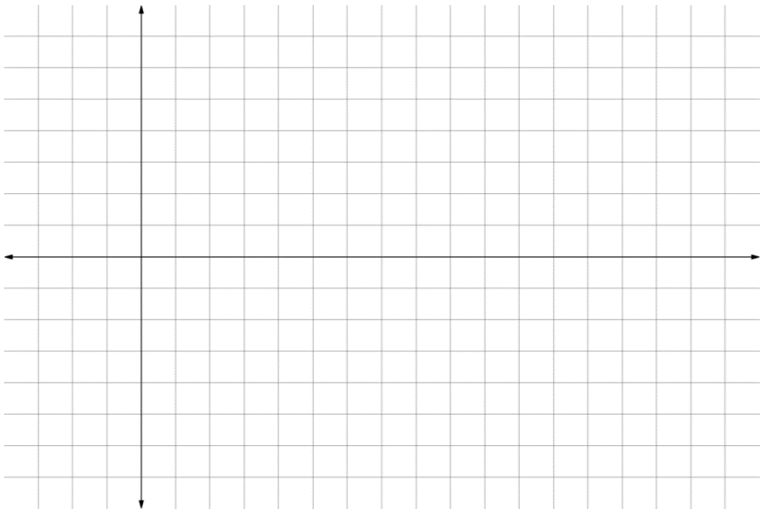
4.) $y = -2\sin\frac{\theta}{2} - 4$

Amplitude = _____

Reflection? **Yes / No** *(circle one)*

Period = _____

Midline: _____



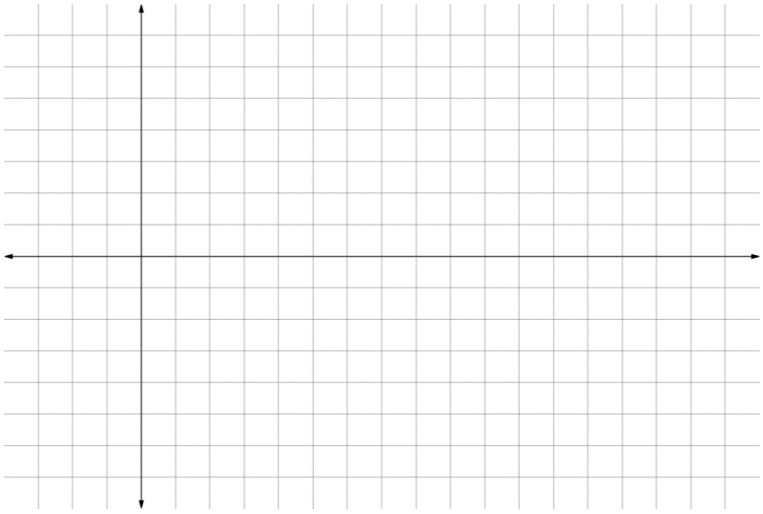
5.) $y = 4\cos\frac{4\theta}{3} + 2$

Amplitude = _____

Reflection? **Yes / No** *(circle one)*

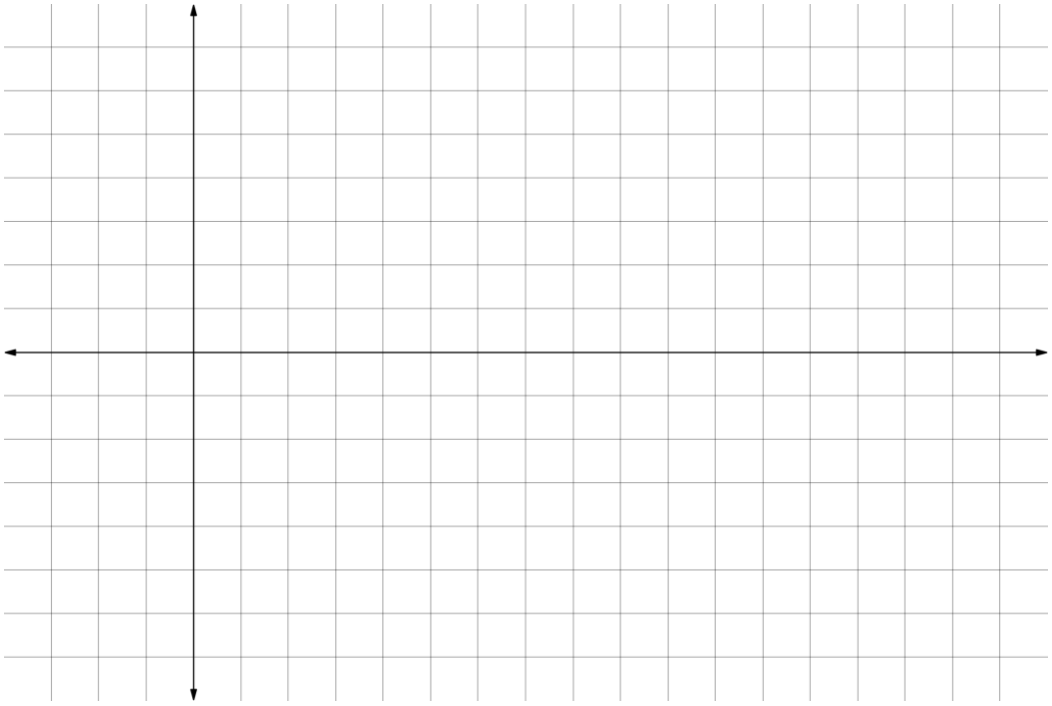
Period = _____

Midline: _____



6.) $y = -3\sin 2\left(\theta + \frac{3\pi}{8}\right) - 2$ *** PLOT GRAPH USING THE ENTIRE GRID!!! ***

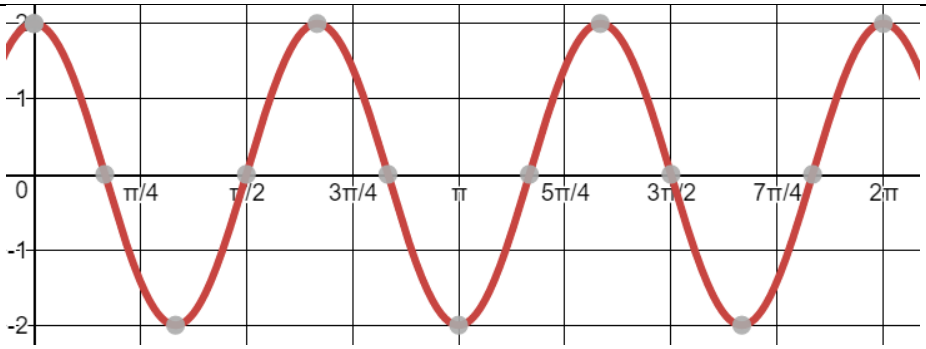
Amplitude = _____ Reflection? **Yes / No** *(circle one)* Period = _____ Midline: _____



Given a Graph, Write the Function:

Given these graphs, fill in all the blanks and then write the correct function, starting with " *y* = " .

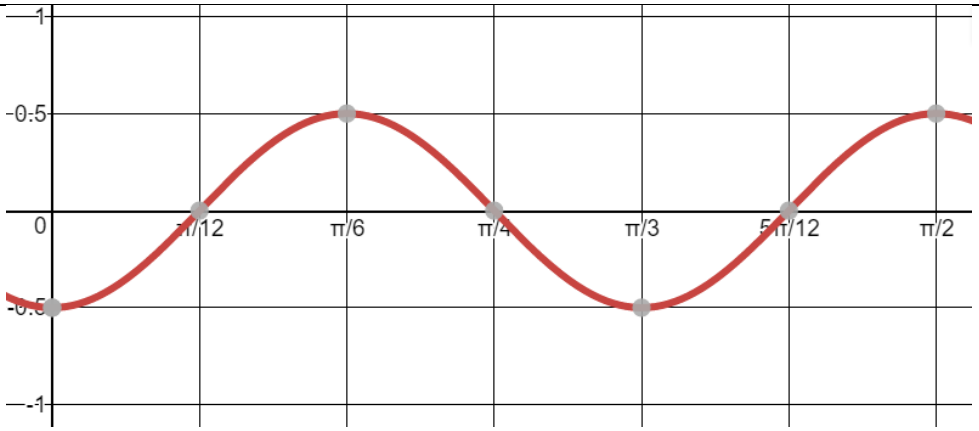
7.)



Amplitude = _____ Reflection? **Yes / No** *(circle one)* *b*-value = _____ Midline: _____

Function: _____

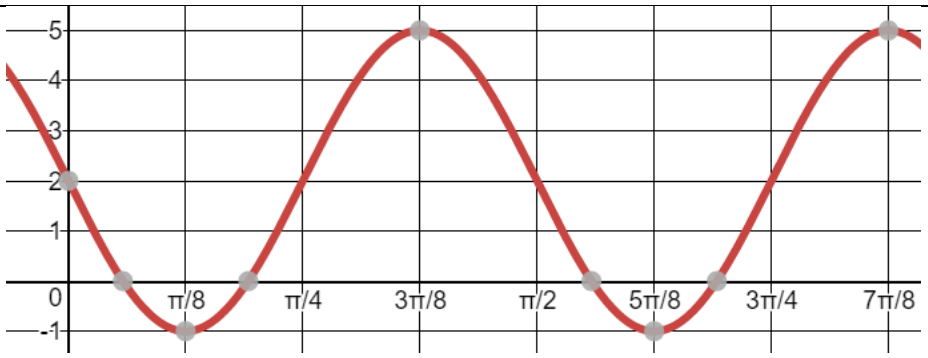
8.)



Amplitude = _____ Reflection? **Yes / No** *(circle one)* *b*-value = _____ Midline: _____

Function: _____

9.)



Amplitude = _____ Reflection? **Yes / No** *(circle one)* *b*-value = _____ Midline: _____

Function: _____

Word Problems:

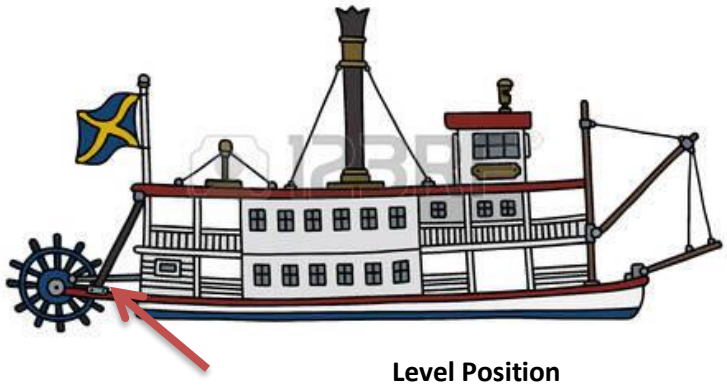
Find all the unknowns. Then write a function that models each situation.

10.) A Ferris Wheel is 170 feet in diameter and is boarded from a platform that is 4 feet above the ground at the bottom of the Ferris Wheel. The ride completes 5 revolutions in 7 minutes. Write a function that models the height of the wheel in terms of the time **in seconds**.

Period = _____ Sin or Cos ? (*circle one*)

A = _____, B = _____, K = _____, Function: h = _____

11.) The Proud Mary is a riverboat that has a 20 foot diameter paddlewheel behind it. As it turns at 15 revolutions per minute, the wheel goes 4 feet below the surface of the water. There is a marker on one of the paddles that helps track the movement of the wheel. When t = 0, the marker is at a level position close to the boat and as the wheel begins to turn, it rotates down toward the water. Write a function that models the height of the wheel in terms of the time **in seconds**.



Level Position

Period = _____ Sin or Cos ? (*circle one*)

A = _____, B = _____, K = _____,

Function:

h = _____

12.) Each day, the tide continuously goes in and out, raising and lowering a boat in the harbor. At low tide, the boat is only 4 feet above the ocean floor and, 6 hours later, at peak high tide, the boat is 30 feet above the ocean floor. Write a function that describes the boat's height above the ocean floor as it relates to time, given that at **midnight is high tide**.

Period = _____ Sin or Cos ? (*circle one*)

A = _____, B = _____, K = _____, Function: h = _____