NAME YOU ASKED TO BE CALLED IN CLASS:

Page 1: Question 1 Part 1

_____

Let $y = -4\cos[2(x - \frac{\pi}{6})] + 5$. Fill in the blanks. Simplify your answers.

Middle $y-$value = _____   Phase shift = _____

Amplitude = _____   Period = _____

Maximum $y-$value = _____   Quarter-period = _____

Minimum $y-$value = _____

Find the $x-$ and $y-$ coordinates for all points corresponding to the middle, top and bottom of the graph of the function for 2 complete cycles, starting at the phase shift. State clearly if the point corresponds to the top, middle or bottom of the graph.

Point 1: $x =$ _____ $y =$ _____ (_____)
         PHASE SHIFT   TOP, MIDDLE or
                                                        BOTTOM

Point 2: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
         PREVIOUS   QUARTER–   TOP, MIDDLE or
         $x-$VALUE   PERIOD   BOTTOM

Point 3: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
         PREVIOUS   QUARTER–   TOP, MIDDLE or
         $x-$VALUE   PERIOD   BOTTOM

Point 4: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
         PREVIOUS   QUARTER–   TOP, MIDDLE or
         $x-$VALUE   PERIOD   BOTTOM

Point 5: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
         PREVIOUS   QUARTER–   TOP, MIDDLE or
         $x-$VALUE   PERIOD   BOTTOM

Point 6: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
         PREVIOUS   QUARTER–   TOP, MIDDLE or
         $x-$VALUE   PERIOD   BOTTOM

Point 7: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
         PREVIOUS   QUARTER–   TOP, MIDDLE or
         $x-$VALUE   PERIOD   BOTTOM

Point 8: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
         PREVIOUS   QUARTER–   TOP, MIDDLE or
         $x-$VALUE   PERIOD   BOTTOM

Point 9: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
         PREVIOUS   QUARTER–   TOP, MIDDLE or
         $x-$VALUE   PERIOD   BOTTOM

Let $y = 2\sin(\frac{3\pi}{2}x + \frac{9\pi}{8}) + 3$. Fill in the blanks. Simplify your answers.

Middle $y-$ value = _____   Phase shift = _____

Amplitude = _____   Period = _____

Maximum $y-$ value = _____   Quarter-period = _____

Minimum $y-$ value = _____

Find the $x-$ and $y-$ coordinates for all points corresponding to the middle, top and bottom of the graph of the function for 2 complete cycles, starting at the phase shift. State clearly if the point corresponds to the top, middle or bottom of the graph.

Point 1: $x =$ _____ $y =$ _____ (_____)
          PHASE SHIFT   TOP, MIDDLE or BOTTOM

Point 2: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
       PREVIOUS   QUARTER–   TOP, MIDDLE or
       $x-$ VALUE   PERIOD   BOTTOM

Point 3: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
       PREVIOUS   QUARTER–   TOP, MIDDLE or
       $x-$ VALUE   PERIOD   BOTTOM

Point 4: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
       PREVIOUS   QUARTER–   TOP, MIDDLE or
       $x-$ VALUE   PERIOD   BOTTOM

Point 5: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
       PREVIOUS   QUARTER–   TOP, MIDDLE or
       $x-$ VALUE   PERIOD   BOTTOM

Point 6: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
       PREVIOUS   QUARTER–   TOP, MIDDLE or
       $x-$ VALUE   PERIOD   BOTTOM

Point 7: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
       PREVIOUS   QUARTER–   TOP, MIDDLE or
       $x-$ VALUE   PERIOD   BOTTOM

Point 8: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
       PREVIOUS   QUARTER–   TOP, MIDDLE or
       $x-$ VALUE   PERIOD   BOTTOM

Point 9: $x =$ _____ + _____ = _____ $y =$ _____ (_____)
       PREVIOUS   QUARTER–   TOP, MIDDLE or
       $x-$ VALUE   PERIOD   BOTTOM

Sketch a detailed graph of 2 complete cycles of $y = -4\cos[2(x - \frac{\pi}{6})] + 5$ using the information from Question 1 Part 1.

You must label all $x-$ and $y-$ values from Part 1 on the appropriate axes below, and you must use a consistent scale for each axis.

You do NOT need to label each tick mark on each axis, only the ones you found in Part 1.
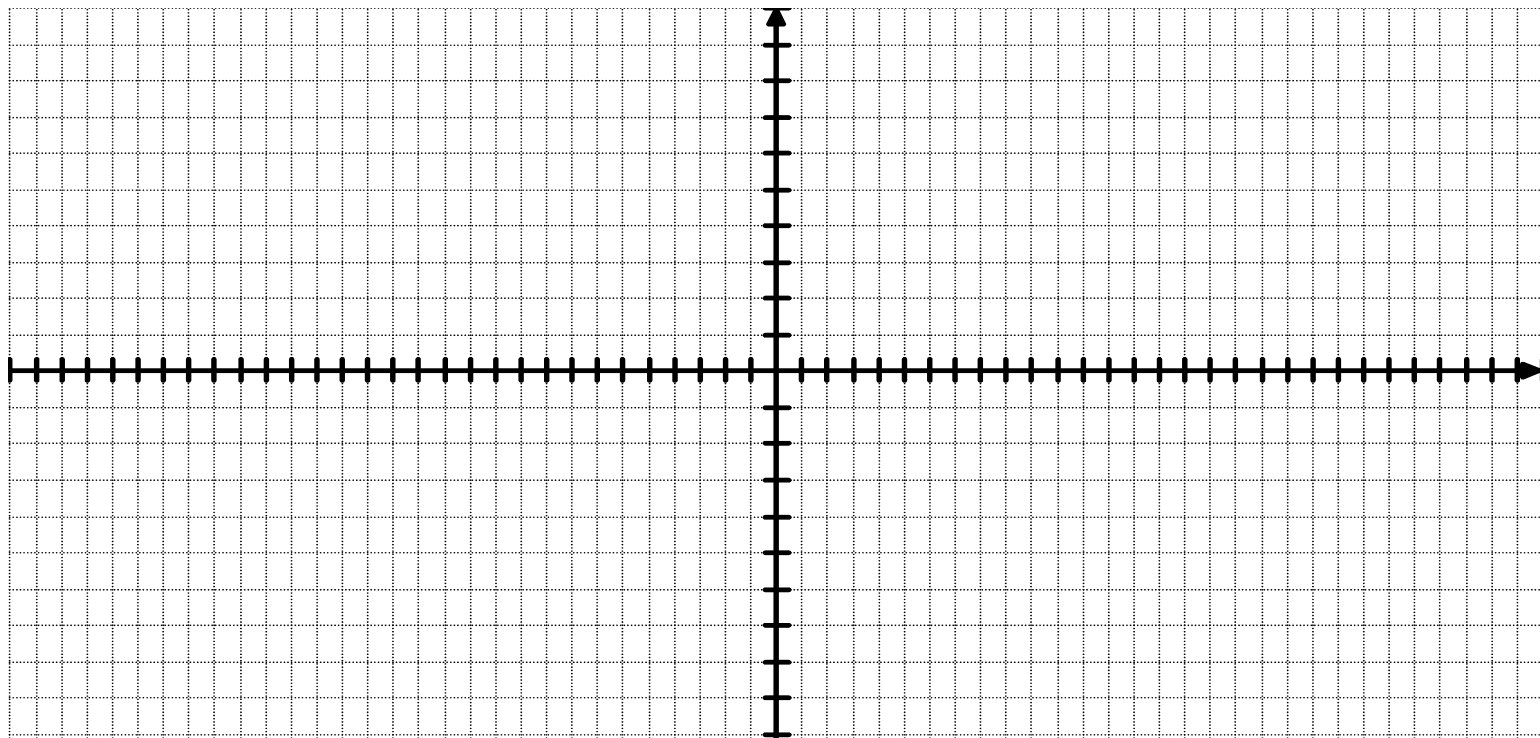
Sketch a detailed graph of 2 complete cycles of $y = 2\sin(\frac{3\pi}{2}x + \frac{9\pi}{8}) + 3$ using the information from Question 2 Part 1.

You must label all $x-$ and $y-$ values from Part 1 on the appropriate axes below, and you must use a consistent scale for each axis.

You do NOT need to label each tick mark on each axis, only the ones you found in Part 1.
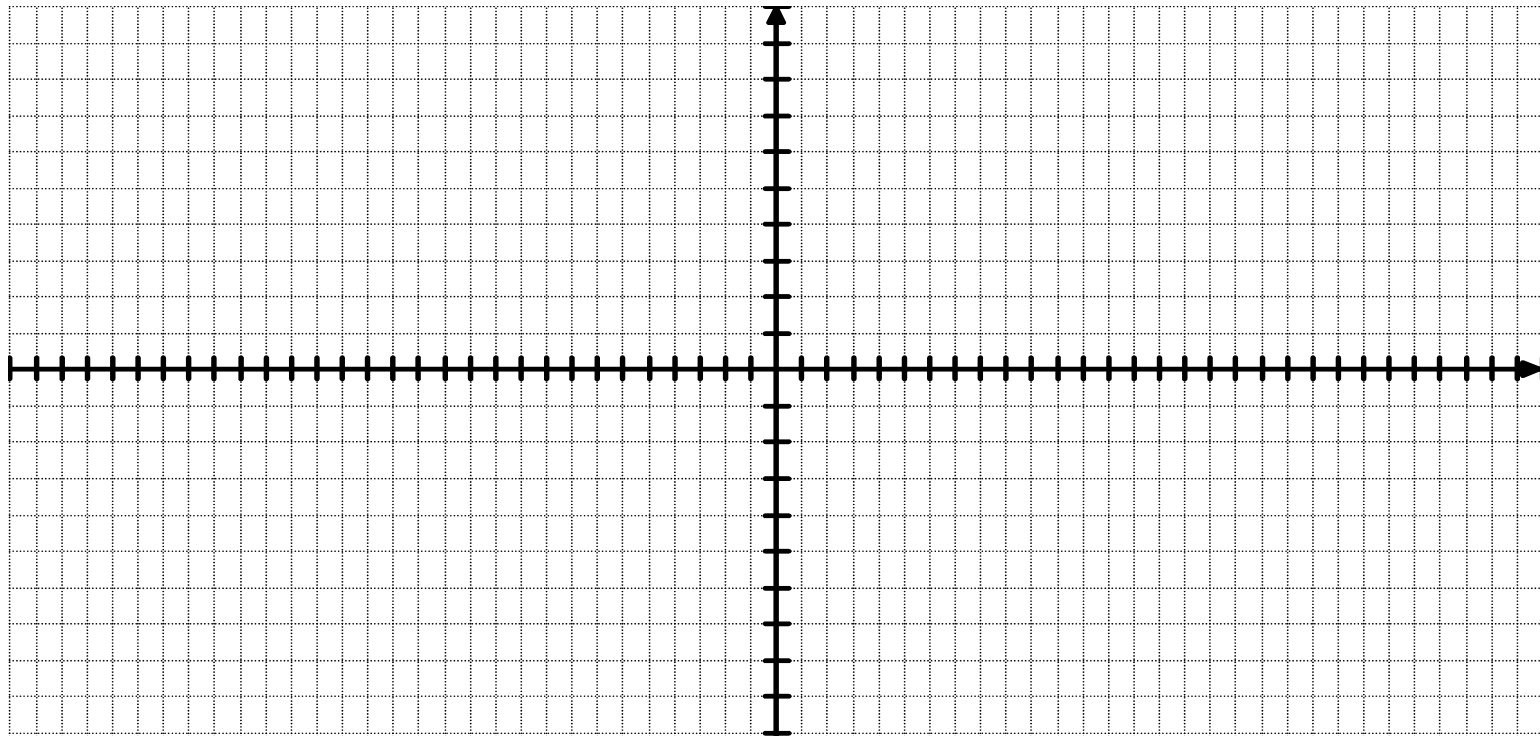
Page 4: Question 3

Fill in the blanks regarding the graph on the right. Simplify your answers.

NOTE: The $x-$ coordinates of the two points highlighted are $-\frac{\pi}{9}$ and $\frac{11\pi}{9}$,
and correspond to points with the middle $y-$ value.

The maximum and minimum $y-$ values are 1 and -3.

Middle $y-$ value = _____ $= D$

Amplitude = _____ $= |A|$
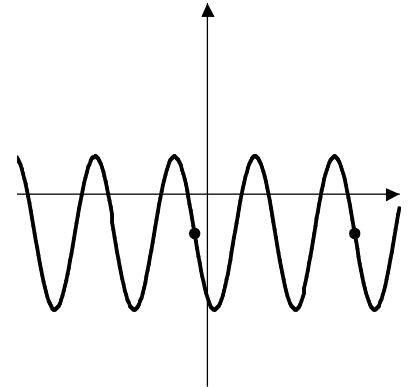
Phase shift = _____ $= C$

Period = _____ $= \frac{2\pi}{B}$ $\Rightarrow$ $B =$ _____

Given the points shown, the equation of the graph is easier to write using a _____ _____ function,

POSITIVE or   SIN or COS
NEGATIVE

So, $A =$ _____.

The equation of the graph is $y =$ _____ _____ _____ $(x -$ _____ $) +$ _____.

         A   SIN or   B   C   D
              COS

You are riding a ferris wheel with a radius of 97 feet, which is turning at a regular rate.
You have a tremendous fear of heights, but you don't want to embarrass yourself in front of your date,
so you try to distract yourself by finding an equation for your height (y) as a function of time (t).

At time $t = 43$ seconds, you are at the bottom of the wheel, which is 3 feet above the ground.
At time $t = 60$ seconds, you are at the top of the wheel. (This is the first time you reach the top after $t = 43$ seconds.)
Fill in the blanks. Simplify your answers.
It may be helpful to draw a crude sketch of the height function and label the known $t-$ and $y-$ values on it.

Maximum $y-$ value = _____   Phase shift = _____ $= C$

Minimum $y-$ value = _____   Period = _____ $= \frac{2\pi}{B}$

Middle $y-$ value = _____ $= D$ $B =$ _____

Amplitude = _____ $= |A|$

Given the crude sketch of the height function, the equation is easier to write using a _____ _____ function,

POSITIVE or   SIN or COS
NEGATIVE

So, $A =$ _____.

The equation of the function is $y =$ _____ _____ _____ $(t -$ _____ $) +$ _____.

         A   SIN or   B   C   D
              COS