Precalculus   Name:
4.4 Practice Worksheet   Period:

(#1-2) Graph 2 periods of the following sinusoidal functions. Label your scale for the x- and y-axis. Identify the sinusoidal axis, period, frequency and amplitude of the graph.

1. $y = -10\cos(2x + \dfrac{\pi}{4}) + 3$

Axis: _____

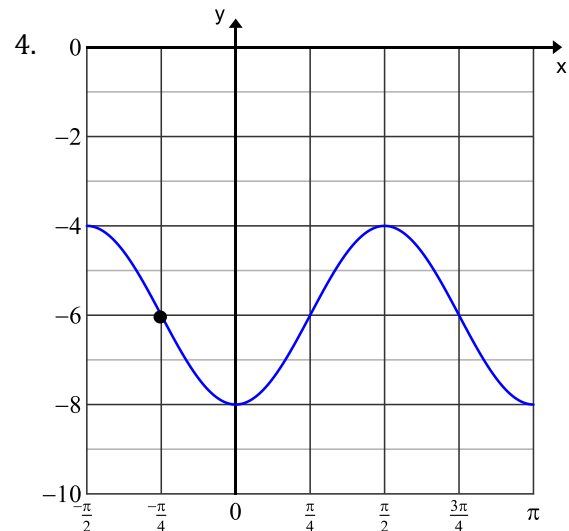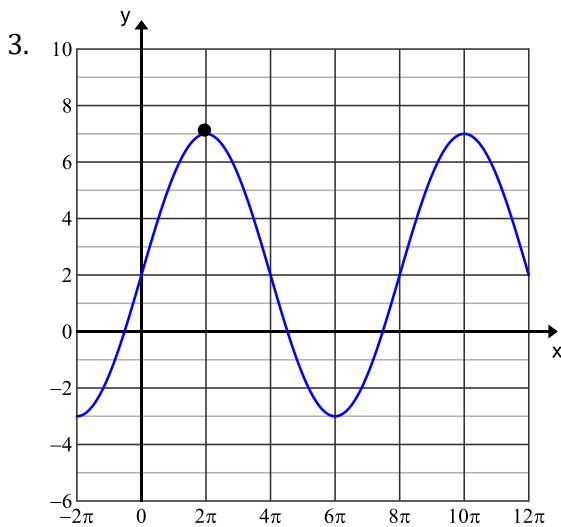Period: _____

Frequency: _____

Amplitude: _____

2. $y = 4\sin(6\pi x) - 2$

Axis: _____

Period: _____

Frequency: _____

Amplitude: _____

(#3-4) Write an equation for the following graphs. Start with the given point.

3.

4.

5. At Cedar Point amusement park in Ohio, the park offers one of the tallest Ferris Wheels in the world, called the "Giant Wheel". The maximum height of the wheel is 136 feet above the ground, and the diameter of the wheel is approximately 130 feet. One full ride on the wheel is two revolutions and it takes two minutes for the ride to finish.

   a. Write the equation of the height of the rider above the ground, if they start the ride at the bottom of the wheel, in terms of time in seconds. Sketch a graph to help you arrive at your answer.

   b. At what times will a rider hit a height of 100 feet during the entire ride?

   c. How high will the rider be after 20 seconds on the ride; after 1 min 10 seconds on the ride?

6. On Memorial Day, the high tide in Northern Oahu occurred at 8:24 A.M. At that time the water level at Turtle Bay was measured to be 20 ft. deep. At 2:36 P.M. it is low tide, and the water level was measured to be 12 ft. deep. Assume the depth of the water is a sinusoidal function of time with a period half of a lunar day (12 hours and 24 minutes).

   a. Write an equation to model the above situation. Sketch a graph to help arrive at your answer.

   b. At what time on that Memorial Day did the first low tide occur?

   c. What was the approximate depth of the water at 3:00 A.M. and at 8:00 P.M. ?

   d. What is the first time on that Memorial Day that the water is 15 feet deep?