**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Unit 7 Review – Trig Graphs**

**Helpful Information:**

$y=A\sin(\left(F\left(x+H\right)\right)+V)$

* + sin can be replaced with cos
	+ A = amplitude (distance from midline to max)
	+ F = frequency (# cycles in a 2π interval)
	+ H = horizontal shift (shifts opposite)
	+ V = vertical shift (midline)

**Level I Practice:**

1. The Ferris wheel at the landmark Navy Pier in Chicago takes 7 minutes to make one full rotation. The height, *H*, in feet, above the ground of one of the six-person cars can be modeled by **, where *t* is time, in minutes. Using  for one full rotation, this car's minimum height, in feet, is

|  |  |
| --- | --- |
| 1) | 150 |
| 2) | 70 |
| 3) | 10 |
| 4) | 0 |

1. Which graph represents a cosine function with no horizontal shift, an amplitude of 2, and a period of ?

|  |  |  |  |
| --- | --- | --- | --- |
| 1) |  | 3) |  |
| 2) |  | 4) |  |
|  |  |
|  |  |

1. The accompanying graph shows a trigonometric function. State an equation of this function.



1. Which statement is *incorrect* for the graph of the function **?

|  |  |
| --- | --- |
| 1) | The period is 6. |
| 2) | The amplitude is 3. |
| 3) | The range is [4,10]. |
| 4) | The midline is . |

**Level II Practice:**

1. On the axes below, graph *one* cycle of a cosine function with amplitude 3, period , midline , and passing through the point .



1. Relative to the graph of , what is the shift of the graph of ?

|  |  |
| --- | --- |
| 1) |  right |
| 2) |  left |
| 3) |  up |
| 4) |  down |

1. Write an equation for the graph of the trigonometric function shown below.



1. The periodic graph below can be represented by the trigonometric equation  where *a*, *b*, and *c* are real numbers.



State the values of *a*, *b*, and *c*, and write an equation for the graph.

**Level III Practice:**

1. The voltage used by most households can be modeled by a sine function. The maximum voltage is 120 volts, and there are 60 cycles *every second*. Which equation best represents the value of the voltage as it flows through the electric wires, where *t* is time in seconds?

|  |  |
| --- | --- |
| 1) |  |
| 2) |  |
| 3) |  |
| 4) |  |

1. The ocean tides near Carter Beach follow a repeating pattern over time, with the amount of time between each low and high tide remaining relatively constant. On a certain day, low tide occurred at 8:30 a.m. and high tide occurred at 3:00 p.m. At high tide, the water level was 12 inches above the average local sea level; at low tide it was 12 inches below the average local sea level. Assume that high tide and low tide are the maximum and minimum water levels each day, respectively. Write a cosine function of the form , where *A* and *B* are real numbers, that models the water level, , in inches above or below the average Carter Beach sea level, as a function of the time measured in *t* hours since 8:30 a.m.

On the grid below, graph one cycle of this function.



People who fish in Carter Beach know that a certain species of fish is most plentiful when the water level is increasing. Explain whether you would recommend fishing for this species at 7:30 p.m. or 10:30 p.m. using evidence from the given context.