**Unit 3 Math III Honors
 Trig Graphs**

1. A student attaches one end of a rope to a wall at a fixed point 3 feet above the ground, as shown in the accompanying diagram, and moves the other end of the rope up and down, producing a wave described by the equation *y* = *a* sin *bx* + *c*. The range of the rope’s height above the ground is between 1 and 5 feet. The period of the wave is 4π. Write the equation that represents this wave.

 

1. The brightness of the star MIRA over time is given by the equation $y=2sin\frac{π}{4}x+6$ where *x* represents time and *y* represents brightness. What is the period of this function, in radian measure?
2. A certain radio wave travels in a path represented by the equation $y=5sin2x$. What is the period of this wave?
3. The path traveled by a roller coaster is modeled by the equation $y=27sin13x+10$. What is the maximum altitude of the roller coaster?
4. An object that weighs 2 pounds is suspended in a liquid. When the object is depressed 3 feet from its equilibrium point, it will oscillate according to the formula x = 3 cos (8t), where t is the number of seconds after the object is released. How many seconds are in the period of oscillation?
5. The accompanying diagram shows a section of a sound wave as displayed on an oscilloscope. Write the equation.

 

1. In physics class, Eva noticed the pattern shown in the accompanying diagram on an oscilloscope. Write the equation.

 

1. A radio transmitter sends a radio wave from the top of a 50-foot tower. The wave is represented by the accompanying graph. What is the equation of this radio wave?

 

1. What is the maximum value for the function $y=\frac{1}{3}sin5x?$
2. What is the phase shift of the following equation?

 

**Sketch each of the trigonometric functions. State the domain, range and period.**

1. f(x) = cos(x)
2. f(x) = sin(x)