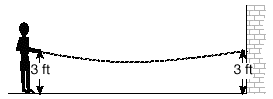
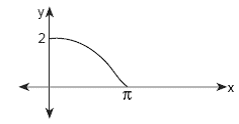
**Unit 3 Math III Honors  
 Trig Graphs**

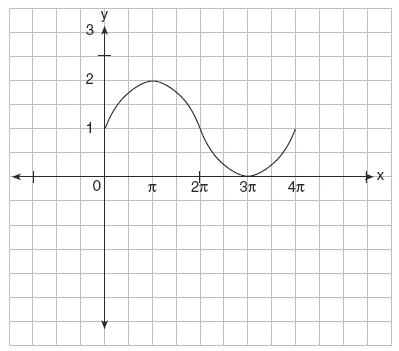
1. A student attaches one end of a rope to a wall at a fixed point 3 feet above the ground, as shown in the accompanying diagram, and moves the other end of the rope up and down, producing a wave described by the equation *y* = *a* sin *bx* + *c*. The range of the rope’s height above the ground is between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



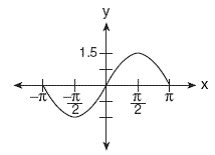
1. The brightness of the star MIRA over time is given by the equation where *x* represents time and *y* represents brightness. What is the period of this function, in radian measure?
2. A certain radio wave travels in a path represented by the equation . What is the period of this wave?
3. The path traveled by a roller coaster is modeled by the equation . 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
2. What is the phase shift of the following equation?

image

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

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