WeBWorK Assignment Homework11 is due : 05/21/2016 at 04:12pm EDT.

Reference: Axler, Precalculus, 2nd ed, Sections 6.1 and 6.2

Here’s the list of functions and symbols that WeBWorK understands.

1. (1 pt) Suppose \( y = 9\sin(5(t + 9)) - 16 \). In your answers, enter \( \pi \) for \( \pi \).
   (a) The midline of the graph is the line with equation _________
   (b) The amplitude of the graph is ______
   (c) The period of the graph is ______

2. (1 pt) Below is the graph of the function \( f(x) = 10\sin\left(\frac{\pi}{5}x\right) \) in blue, and a second sinusoidal function \( y = g(x) \) in red, which is a horizontal shift of \( y = f(x) \). Find a formula for the function \( g(x) \).
   \( g(x) = \) __________

3. (1 pt) Find a formula for the trigonometric function graphed below. Use \( x \) as the independent variable in your formula.
   \( f(x) = \) __________

4. (1 pt) Find a possible formula for the trigonometric function graphed below. Use \( x \) as the independent variable in your formula.
   \( f(x) = \) __________

5. (1 pt) The pressure \( P \) (in pounds per square foot), in a pipe varies over time. Five times an hour, the pressure oscillates from a low of 80 to a high of 280 and then back to a low of 80. The pressure at time \( t = 0 \) is 80. Let the function \( P = f(t) \) denote the pressure in pipe at time \( t \) minutes.
   Find a possible formula for the function \( P = f(t) \) described above.
   \( f(t) = \) __________

6. (1 pt)
   Convert the following rectangular coordinates into polar coordinates. Always choose \( 0 \leq \theta < 2\pi \).
   (a) \((0,5)\)
   \( r = \) ________, \( \theta = \) ________.
7. (1 pt) Convert the following polar coordinates into rectangular coordinates.

(a) \((2, \frac{\pi}{4})\)
\[x = \quad , \quad y = \quad .\]

(b) \((4, \frac{2\pi}{3})\)
\[x = \quad , \quad y = \quad .\]

(c) \((6, \frac{3\pi}{2})\)
\[x = \quad , \quad y = \quad .\]

(d) \((6, \frac{5\pi}{3})\)
\[x = \quad , \quad y = \quad .\]

8. (1 pt) A curve with polar equation
\[r = \frac{45}{4\sin \theta + 33\cos \theta}\]
represents a line. This line has a Cartesian equation of the form
\[y = mx + b\]
where \(m\) and \(b\) are constants. Give the formula for \(y\) in terms of \(x\). For example, if the line had equation \(y = 2x + 3\) then the answer would be \(2 \times x + 3\).