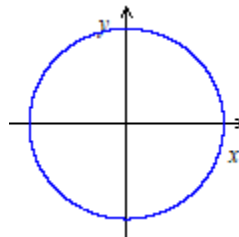
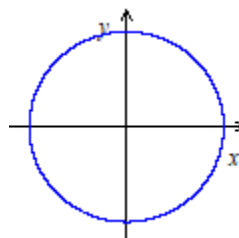


Practice Worksheet: Angles and Arc-length

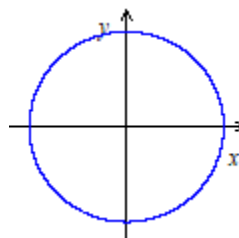
1. a. Draw 140° in standard position on the provided coordinate plane.



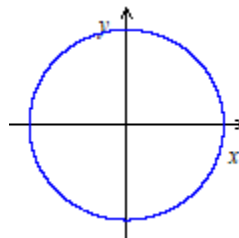
- b. Draw -250° in standard position on the provided coordinate plane.



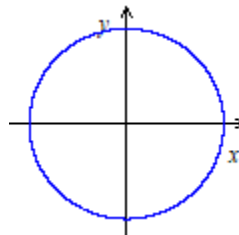
- c. Draw $\frac{4\pi}{5}$ radians in standard position on the provided coordinate plane.



- d. Draw 4 radians in standard position on the provided coordinate plane.



- d. Draw -3 radians in standard position on the provided coordinate plane.



2. Complete the table below.

θ (degrees)	0°	30°		60°	90°		270°	360°	
θ (radians)			$\frac{\pi}{4}$			π			20π

3. a. Convert $\frac{\pi}{10}$ radians into degrees.

b. Convert 4 radians into degrees.

c. Convert 10° into radians.

d. Convert 140° into radians.

e. Convert 1200° into radians.

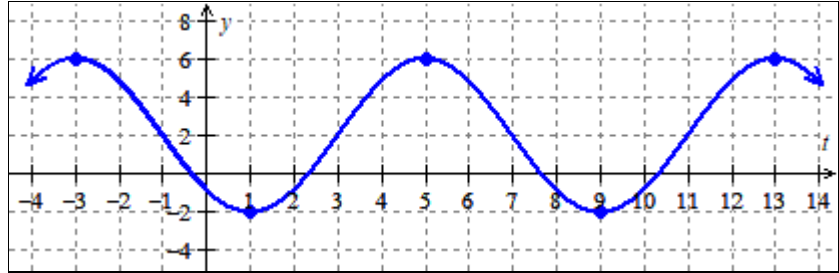
4. a. Find both a positive and a negative angle that are coterminal with 140° .
(Answer in degrees.)
- b. Find both a positive and a negative angle that are coterminal with $-\frac{5\pi}{8}$.
(Answer in radians.)
- c. Try to find a way to represent all of the (infinitely many) different angles that are coterminal with 70° .
- d. Try to find a way to represent all of the (infinitely many) different angles that are coterminal with $\frac{3\pi}{5}$.

8. What is the length of the arc spanned by the angle $\frac{4\pi}{5}$ radians on a circle of radius 15 feet?

9. What is the length of the arc spanned by the angle 135° on a circle of radius 8 meters?

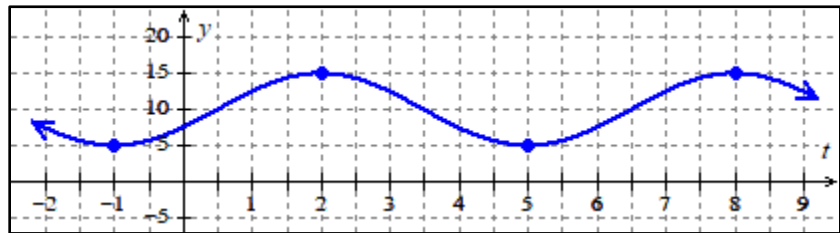
Practice Worksheet: Periodic Functions

1. Determine the period, midline and amplitude of the function $y = f(t)$ graphed below. Note that the following points are on the graph: $(-3, 6)$, $(1, -2)$, $(5, 6)$, $(9, -2)$, and $(13, 6)$.



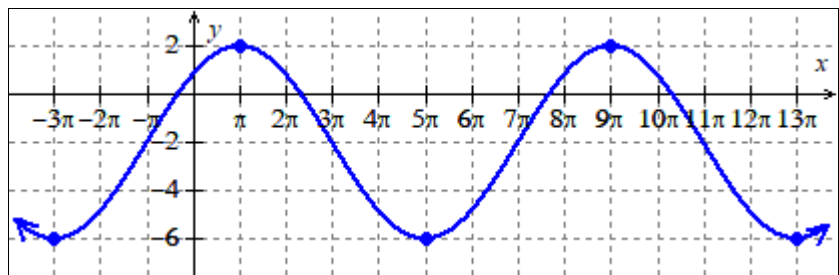
A graph of $y = f(t)$.

2. Determine the period, midline and amplitude of the function $y = m(t)$ graphed below. Note that the following points are on the graph: $(-1, 5)$, $(2, 15)$, $(5, 5)$, and $(8, 15)$.



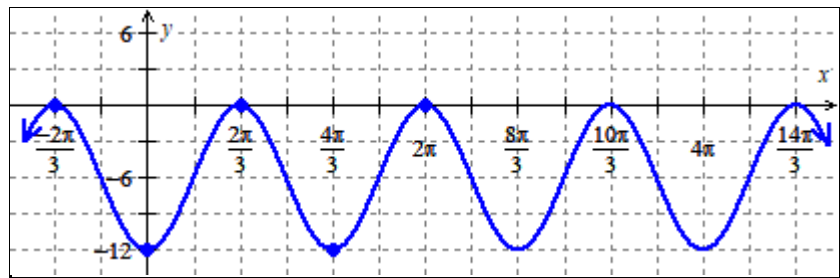
A graph of $y = m(t)$.

3. Determine the period, midline and amplitude of the function $y = p(x)$ graphed below. Note that the following points are on the graph: $(-3\pi, -6)$, $(\pi, 2)$, $(5\pi, -6)$, and $(9\pi, 2)$.



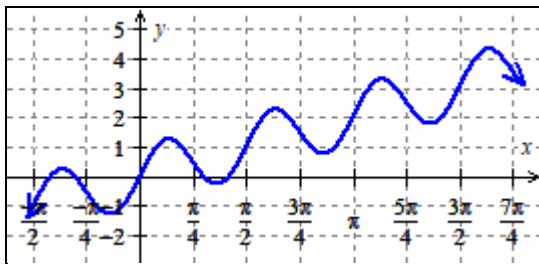
A graph of $y = p(x)$.

4. Determine the period, midline and amplitude of the function $y = g(t)$ graphed below. Note that the following points are on the graph: $(-\frac{2\pi}{3}, 0)$, $(0, -12)$, $(\frac{2\pi}{3}, 0)$, and $(\frac{4\pi}{3}, -12)$.

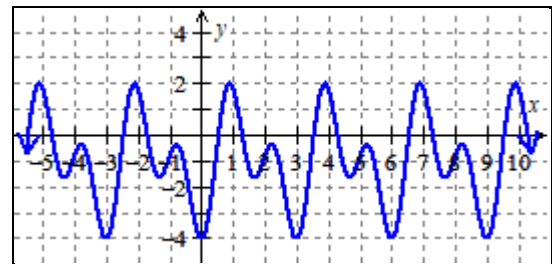


A graph of $y = g(t)$.

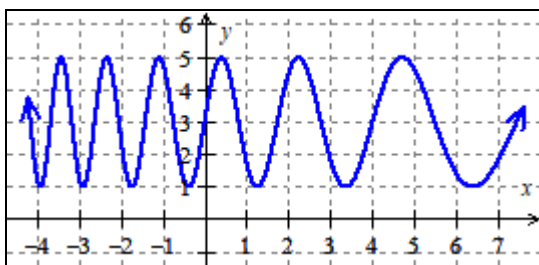
5. Determine which of the functions graphed below are periodic functions and find the period, midline, and amplitude of the periodic functions.



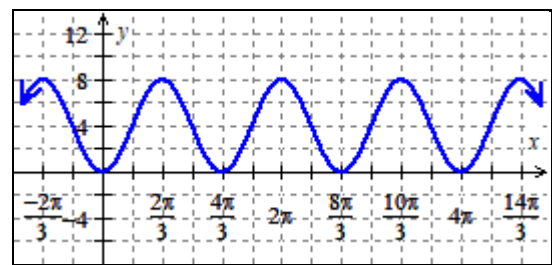
$y = A(x)$



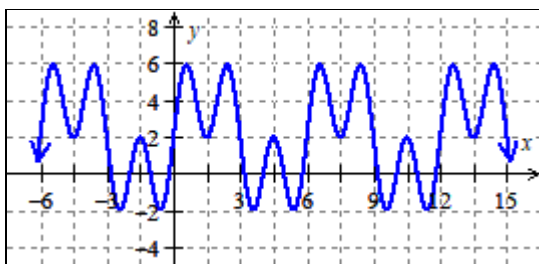
$y = B(x)$



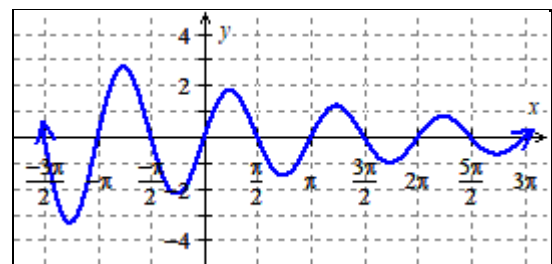
$y = C(x)$ is



$y = D(x)$



$y = E(x)$



$y = F(x)$

6. There's a Ferris wheel with a diameter of 80 feet. The wheel rotates at a constant rate, and completes a full rotation every 20 minutes. The wheel is lifted 10 feet above the ground level, and passengers load into carriages at the lowest point in the wheel's travel (so passengers start their trip 10 feet above the ground). Determine the period, midline and amplitude of the function that associates amount of time a passenger spends in a carriage travelling around the wheel with the height (in feet) above the ground of such a passenger.
7. Describe an activity in your life or that you're familiar with that's periodic (or approximately periodic). What's the period? Is there a midline and amplitude? (Not all periodic behaviors have midlines or amplitudes.) If you can't think of anything else, describe the high temperature in Portland each day.