[redacted] [redacted]

[redacted]

"Why were the screams coming from the kitchen?"

Make the conversion from degrees to radians and from radians to degrees. To figure out the joke, place the letter of each problem above the answer on the line(s) below.

Convert #1-6 from degrees to radians.

E. 20° A. 120° K. -145°

H. 320° G. -245° B. 630°

Convert #7-13 from radians to degrees.

N. $\frac{\pi}{4}$ W. $\frac{2\pi}{5}$ T. $\frac{-5\pi}{60}$

S. $\frac{7\pi}{6}$ C. $\frac{13\pi}{3}$ I. $\frac{-5\pi}{4}$ O. $\frac{11\pi}{3}$

-15°	$\frac{16\pi}{9}$	$\frac{\pi}{9}$	780°	660°	660°	$\frac{-29\pi}{36}$	72°	$\frac{2\pi}{3}$	210°

$\frac{7\pi}{2}$	$\frac{\pi}{9}$	$\frac{2\pi}{3}$	-15°	-225°	45°	$\frac{-49\pi}{36}$

-15°	$\frac{16\pi}{9}$	$\frac{\pi}{9}$	$\frac{\pi}{9}$	$\frac{-49\pi}{36}$	$\frac{-49\pi}{36}$	210°

[redacted]

Name: _____

Convert from degrees to radians.

1. 212°

2. -85°

3. 415°

Convert from radians to degrees

4. $-\frac{3\pi}{4}$

5. $\frac{15\pi}{19}$

6. $\frac{6\pi}{7}$

Draw the angle in standard position and state which quadrant the terminal side is in.

7. 275°

8. -105°

9. 480°

10. 170°

11. $-\frac{3\pi}{4}$

12. $\frac{9\pi}{2}$

13. $\frac{13\pi}{14}$

14. $\frac{7\pi}{4}$

Find a coterminal angle between 0° and 360°

15. 1770°

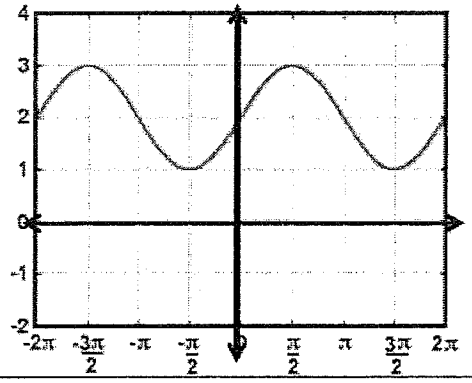
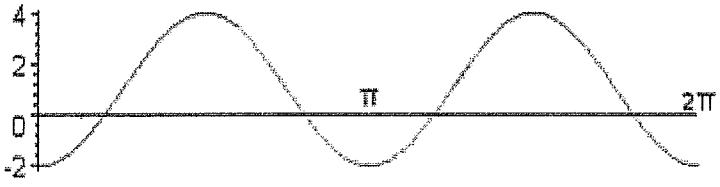
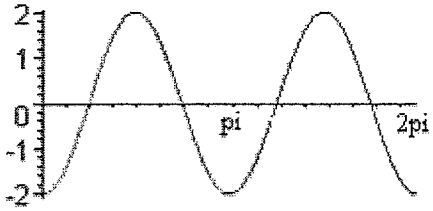
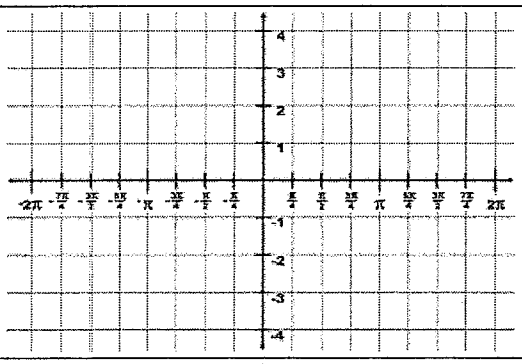
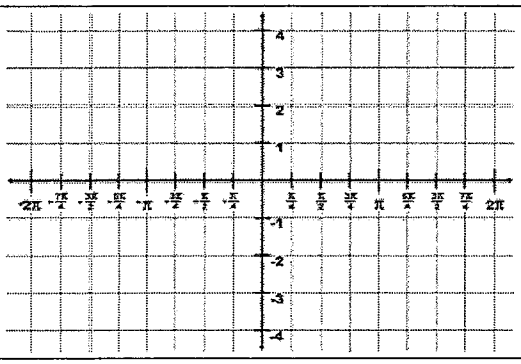
16. -412°

Find a coterminal angle between 0 and 2π

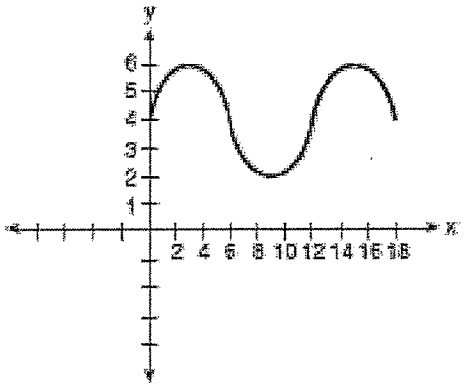
17. $-\frac{15\pi}{4}$

18. $\frac{27\pi}{5}$

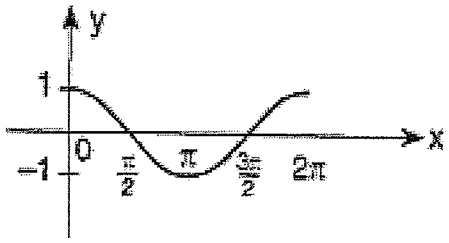
Practice: Complete the table with the missing information. Graph when necessary.

	**Midline:** **Amplitude:** **Period:** **Equation:**
	**Midline:** **Amplitude:** **Period:** **Equation:**
	**Midline:** **Amplitude:** **Period:** **Equation:**
	**Equation:** **Midline:** **Amplitude:** **Period:**
	**Equation:** **Midline:** **Amplitude:** **Period:**

1. What are the midline and amplitude of the sine graph below?

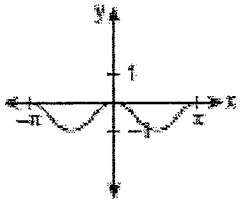


2. The graph below *incorrectly* represents the equation $y = 2cosx$. Write a mathematical explanation of why this graph is incorrect.

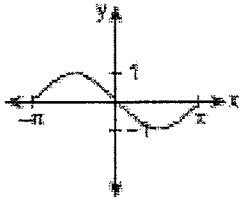


3. Which graph represents the function $f(x) = -\sin x$ in the interval $-\pi \leq x \leq \pi$?

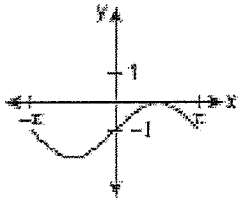
1)



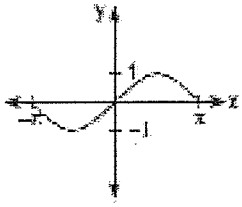
3)



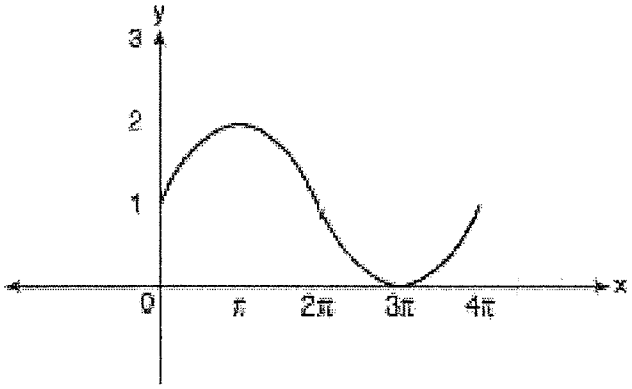
2)



4)

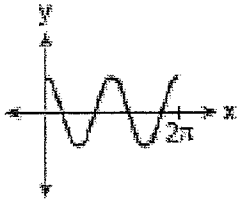


4. What is the amplitude of the graph?

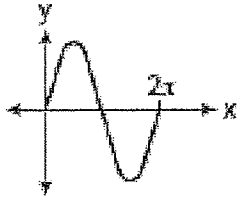


5. Which graph represents a sound wave that follows a curve whose period is π and that is in the form $y = a\sin bx$?

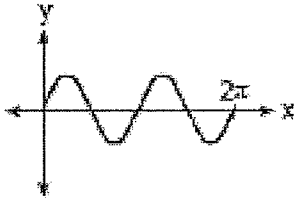
(1)



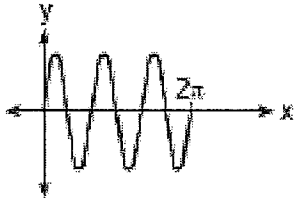
(2)



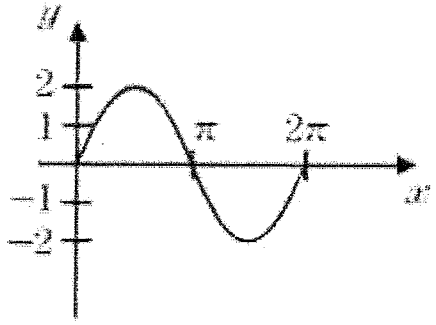
(3)



(4)

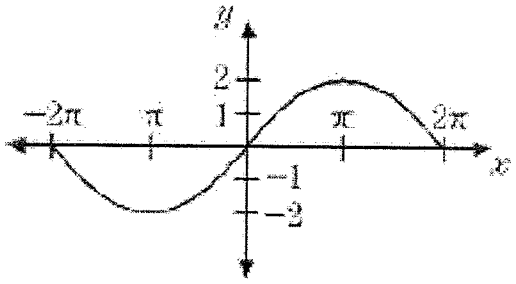


6. What is the equation of the graph below?



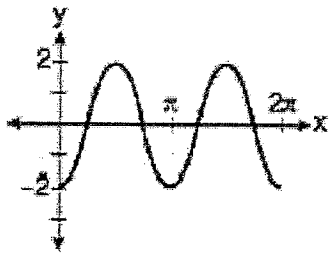
1) $y = \sin 2x$
3) $y = \cos 2x$
2) $y = 2\cos x$
4) $y = 2\sin x$

7. What is the equation represents the graph below?



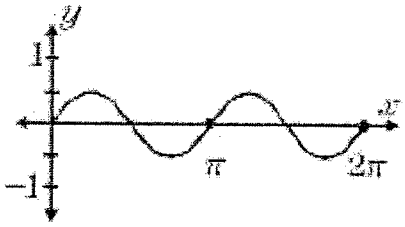
1) $y = 2\sin 2x$
3) $y = \frac{1}{2}\sin x$
2) $y = 2\sin \frac{1}{2}x$
4) $y = 2\cos 2x$

8. Which equation represents the graph below?



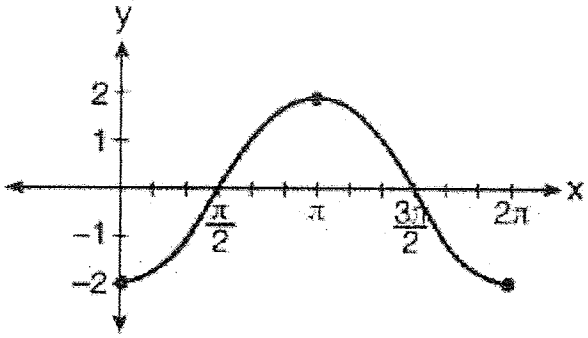
1) $y = -2\sin 2x$
3) $y = -2\cos 2x$
2) $y = -2\sin \frac{1}{2}x$
4) $y = -2\cos \frac{1}{2}x$

9. Which equation is represented in the accompanying graph?

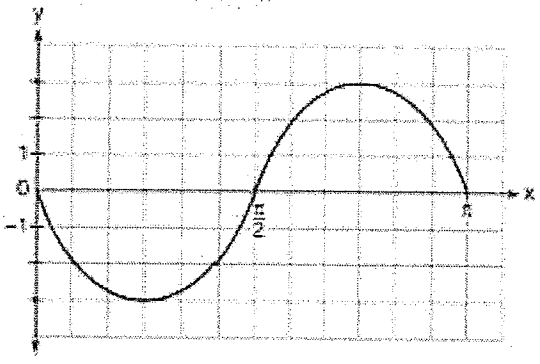


1) $y = 2\sin 2x$
3) $y = 2\sin \frac{1}{2}x$
2) $y = \frac{1}{2}\sin \frac{1}{2}x$
4) $y = \frac{1}{2}\sin 2x$

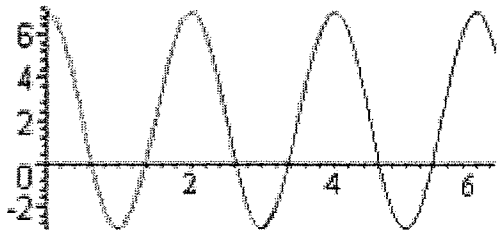
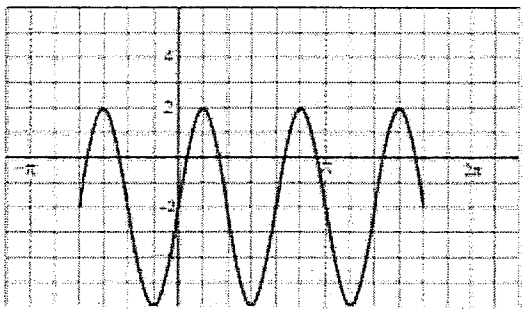
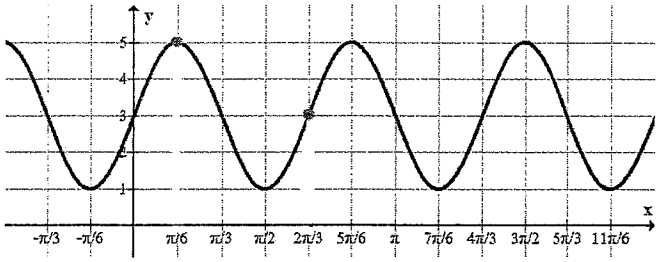
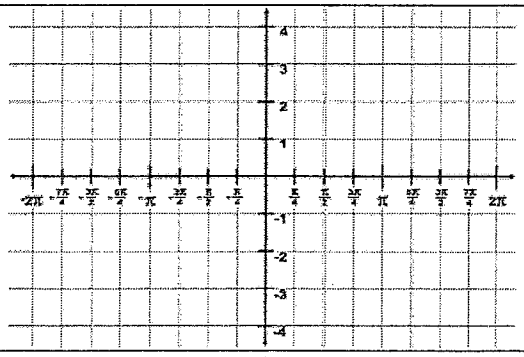
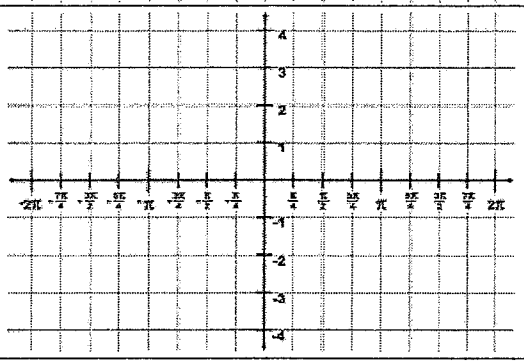
10. The accompanying graph shows a trigonometric function. Stat the equation of this function



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



Practice: Complete the table with the missing information. Graph when necessary.

	**Midline:** **Vertical Shift:** **Amplitude:** **Period:** **Equation:**
	**Midline:** **Vertical Shift:** **Amplitude:** **Period:** **Equation:**
	**Midline:** **Vertical Shift:** **Amplitude:** **Period:** **Equation:**
	**Equation:** $y=2\sin(1/2\ (x-3))+4$ **Midline:** **Vertical Shift:** **Amplitude:** **Phase Shift:** **Period:**
	**Equation:** $y=3\cos(3x+6)+2$ **Midline:** **Vertical Shift:** **Amplitude:** **Phase Shift:** **Period:**

1)
The amplitude of the graph of the equation $y = 4\sin 2x$ is

A. 1 B. 2 C. $\frac{1}{2}$ D. 4

2) What is the period of the function $y = 5\sin 3x$?

1) 5
2) $\frac{2\pi}{5}$
3) 3
4) $\frac{2\pi}{3}$

3) What is the range of the function $y = 3\sin x$?

A. $y \geq 0$ B. $-1 \leq y \leq 1$
C. $y \leq 3$ D. $-3 \leq y \leq 3$

4) What is the amplitude of the graph of the equation $y = 2\sin\frac{1}{2}x$?

1) $\frac{1}{2}$
2) 2
3) π
4) 2π

5) If $f(x) = 2\sin 3x + C$, then the maximum value of $f(x)$ is:

1) C
2) $C+2$
3) $C+3$
4) $C+6$

6) What is the minimum value of $f(\theta)$ in the equation $f(\theta) = 3\sin 4\theta$?

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

7) The graph of which function has an amplitude of 2 and a period of 4π?

1) $y = 2\sin\frac{1}{2}x$
2) $y = 2\sin 4x$
3) $y = 4\sin\frac{1}{2}x$
4) $y = 4\sin 2x$

8) What is the period of the function $y = \frac{1}{2}\sin\left(\frac{x}{3} - \pi\right)$?

1) $\frac{1}{2}$
2) $\frac{1}{3}$
3) $\frac{2}{3}\pi$
4) 6π

9) What is the amplitude of the graph of the equation $y = 4\sin\frac{1}{2}x$?

10) A certain radio wave travels in a path represented by the equation $y = 5\sin 2x$. What is the period of this wave?

11) The path traveled by a roller coaster is modeled by the equation $y = 27\sin 13x + 30$. What is the maximum altitude of the roller coaster?

12) The expression $3\sin\frac{1}{2}x$ reaches its maximum value when x, expressed in radians, equals

1) $\frac{\pi}{2}$
2) $\frac{3}{2}$
3) 3
4) π

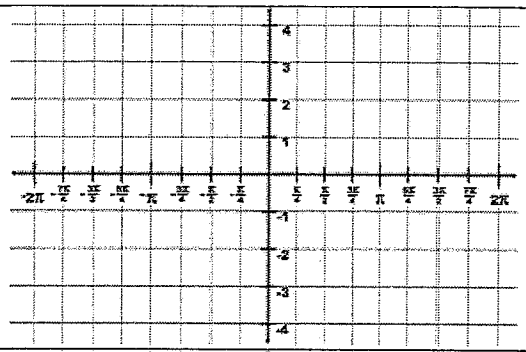
Sine and Cosine Graphing Practice

1. Equation: $y = sin\ 2x - 2$

Midline: Vertical Shift:

Amplitude: Phase Shift:

Period:

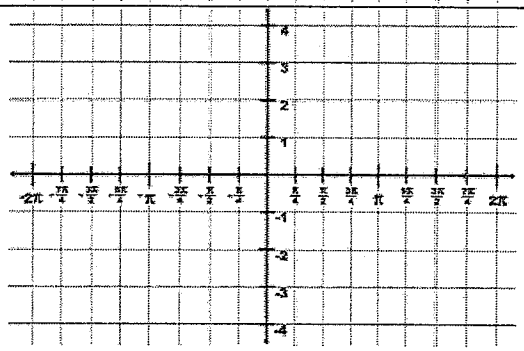


2. Equation: $y = 3\ cos\ (\pi x - 2) + 1$

Midline: Vertical Shift:

Amplitude: Phase Shift:

Period:

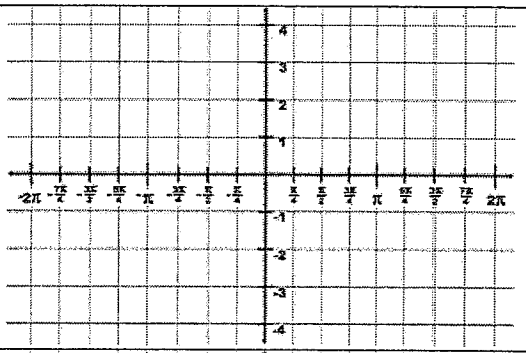


3. Equation: $y = -sin\ (\pi x + 1) - 2$

Midline: Vertical Shift:

Amplitude: Phase Shift:

Period:

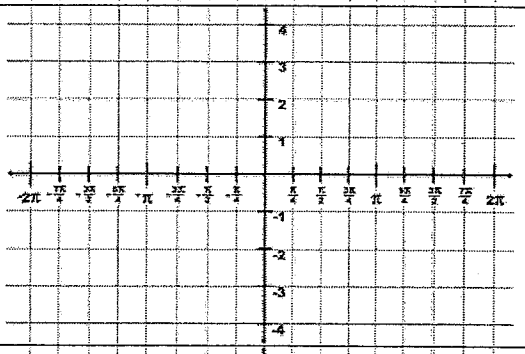


4. Equation: $y = 3\ cos\frac{1}{2}x$

Midline: Vertical Shift:

Amplitude: Phase Shift:

Period:

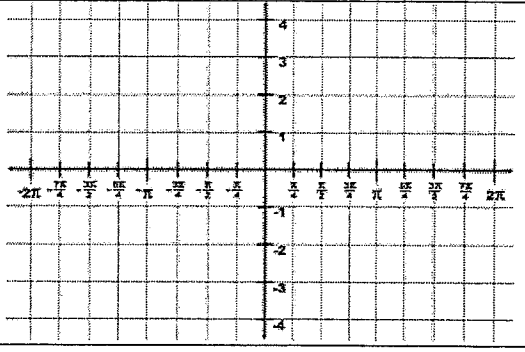


5. Equation: $y = sin\ (2x - \pi) + 1$

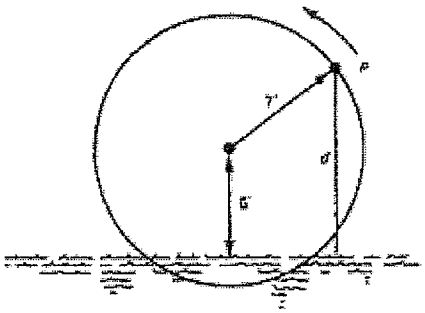
Midline: Vertical Shift:

Amplitude: Phase Shift:

Period:



Practice 1: Suppose a waterwheel (shown in the figure) makes a complete rotation every 12 seconds. You start your stopwatch. Three seconds later, point P on the rim of the wheel is at the greatest height. You are to model the distance of point P from the surface of the water in terms of the number of seconds, t, the stopwatch reads.



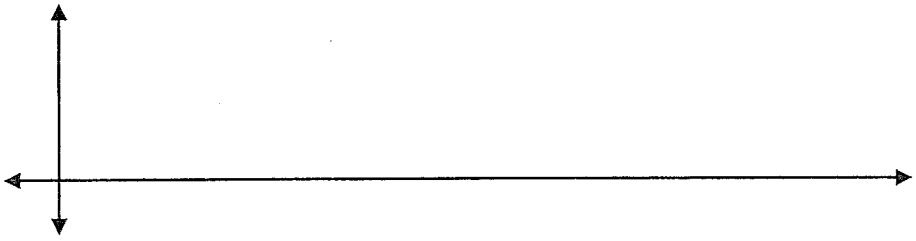
a. Make a sketch of the graph of this sinusoid.

b. Write an equation (sine or cosine) that models this sinusoid.

c. How far is point P from the water after 5.5 seconds?

Practice 2: As an oil well pumps, the height of its cathead varies sinusoidally with time. Suppose that the pump is started at time t=0 seconds. Two seconds later, it is at its highest point above the ground, 22 feet. It is at its next low point (8 feet) 2.5 seconds after that.

a. Make a sketch of the graph of this sinusoid.



b. Write an equation (sine or cosine) that models this sinusoid.

c. What is the height of the cathead after 10 seconds?