

York College, CUNY Math 120 – PreCalculus ~ HW 13

- The sine, cosine, secant, and cosecant functions have period \_\_\_\_\_ ; the tangent and cotangent functions have periods \_\_\_\_\_ .
- The domain of tangent function is \_\_\_\_\_.
- The range of sine function is \_\_\_\_\_.
- True or false: The only even trigonometric functions are cosine and secant function.
- True or false: The graph of  $y = \sin(x)$  and  $y = \cos(x)$  are identical except for a horizontal shift.
- True or false: The graph of  $y = \sin(x)$  has infinitely many intercepts.
- Suppose that we are given that  $\sec(\theta) = -2$  and  $\sin(\theta) > 0$ ,
  - In which quadrant does the angle  $\theta$  lies?
  - Find the exact values of the remaining trigonometric functions of  $\theta$ .
- Find the exact values of the given expression using the following table.

$\theta$	Radians	Sin $\theta$	Cos $\theta$	Tan $\theta$
$0^\circ$	0	0	1	0
$30^\circ$	$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$
$45^\circ$	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1
$60^\circ$	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$
$90^\circ$	$\frac{\pi}{2}$	1	0	—
$180^\circ$	$\pi$	0	-1	0
$270^\circ$	$\frac{3\pi}{2}$	-1	0	—

- |                   |                            |                             |                             |
|-------------------|----------------------------|-----------------------------|-----------------------------|
| (a) $\tan(11\pi)$ | (c) $\sin(\frac{5\pi}{4})$ | (e) $\cot(420^\circ)$       | (g) $\cos(\frac{13\pi}{6})$ |
| (b) $\sec(20\pi)$ | (d) $\cot(\frac{9\pi}{4})$ | (f) $\tan(\frac{13\pi}{4})$ | (h) $\csc(\frac{9\pi}{6})$  |

9. Complete the sentences below:

(a) The function  $y = 5 \cos(4x)$  has amplitude \_\_\_\_\_, and period \_\_\_\_\_.

(b) The function  $y = 3 \sin(\pi x)$  has amplitude \_\_\_\_\_, and period \_\_\_\_\_.

10. Let  $f(x) = \cos(x)$ , complete the following:

(a) What is the  $y$ -intercept of the graph of  $f(x)$ ?

(b) For what numbers  $x$ ,  $-\pi \leq x \leq \pi$ , is the graph of  $f(x)$  decreasing?

(c) What is the maximum value of  $f(x)$ ?

(d) For what numbers  $x$ ,  $-2\pi \leq x \leq 2\pi$ , does  $f(x) = 1$ ?

(e) What are the  $x$  intercepts of  $f(x)$ ?

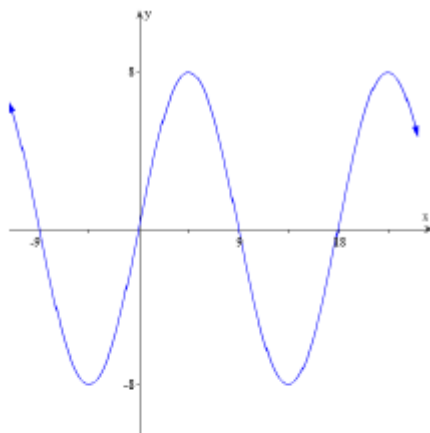
11. Use amplitude and period to match each graph with an equation.

(a)  $y = -3 \cos\left(\frac{x}{2}\right)$

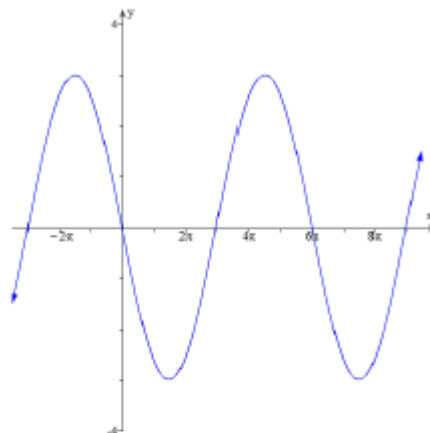
(c)  $y = -3 \sin\left(\frac{1}{3}x\right)$

(b)  $y = -8 \sin\left(\frac{\pi}{9}x\right)$

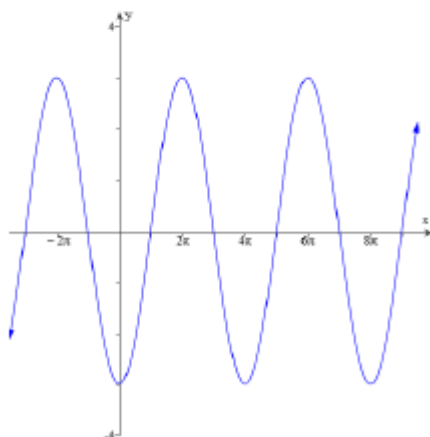
(d)  $y = 9 \cos(3x)$



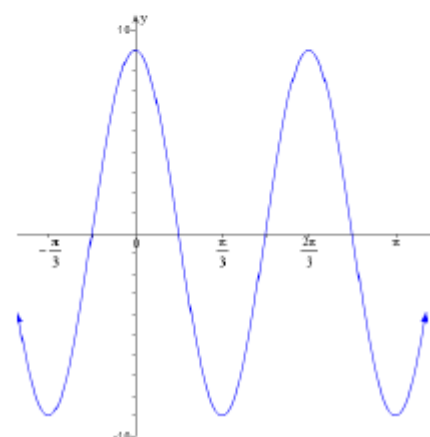
(1)



(2)



(3)



(4)

