

Name: Key Date: \_\_\_\_\_ Period: \_\_\_\_\_ Assignment # \_\_\_\_\_

### 9.4A WS - Graphing Sine & Cosine w/ Amplitude and Period

For  $y = a \sin bx$  or  $y = a \cos bx$ : Amplitude ( $A$ ) =  $|a|$  and Period ( $P$ ) =  $\frac{2\pi}{|b|}$

#1-6: Determine the amplitude ( $A$ ) and the period ( $P$ ) of each function.

1.  $y = \sin 4x$

$A = 1, P = \frac{\pi}{2}$

2.  $y = \cos 5x$

$A = 1, P = \frac{2\pi}{5}$

3.  $y = -2 \sin x$

$A = 2, P = 2\pi$

4.  $y = -4 \cos 5x$

$A = 4, P = \frac{2\pi}{5}$

5.  $y = 3 \sin \frac{2}{3}x$

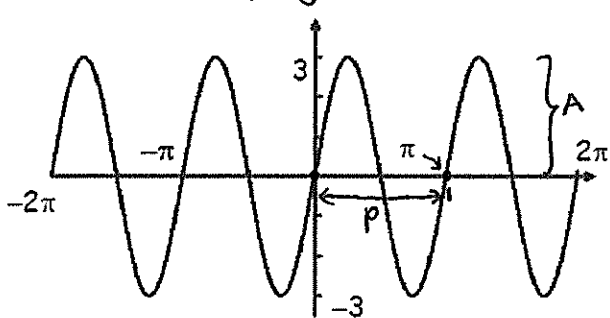
$A = 3, P = 3\pi$

6.  $y = \frac{1}{2} \cos(-4x)$

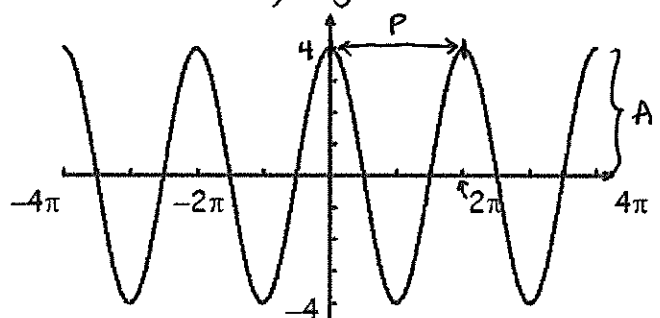
$A = \frac{1}{2}, P = \frac{\pi}{2}$

#7-10: Give the amplitude ( $A$ ) and the period ( $P$ ) of each function graphed below. Then write an equation of each graph.

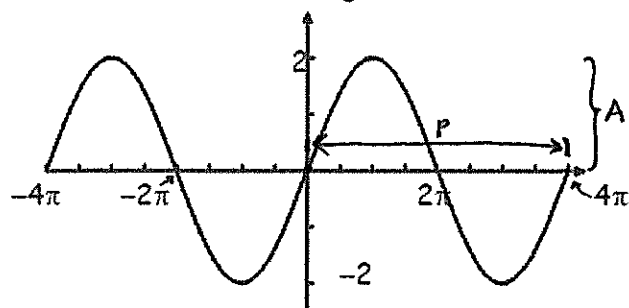
7.  $A = 3, P = \pi; y = 3 \sin 2x$



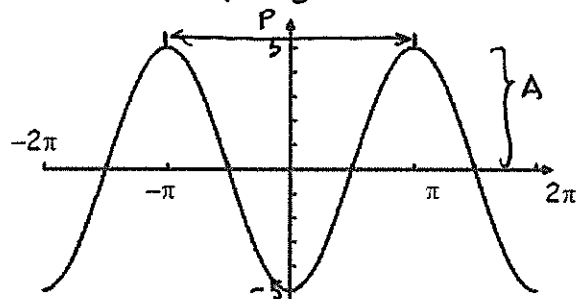
8.  $A = 4, P = 2\pi; y = 4 \cos x$



9.  $A = 2, P = 4\pi; y = 2 \sin \frac{1}{2}x$



10.  $A = 5, P = 2\pi; y = -5 \cos x$



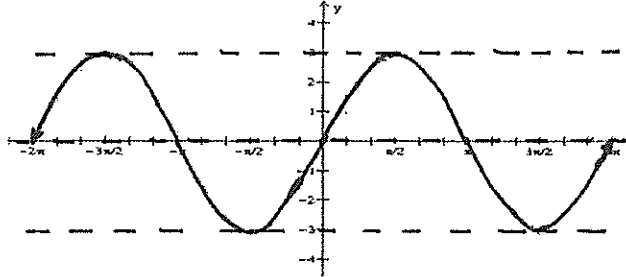
#11–15: Give the amplitude ( $A$ ) and the period ( $P$ ) of each function. Then graph the function over the interval  $-2\pi \leq x \leq 2\pi$ . Be as accurate with your graphing as possible. Make sure your x-intercepts and y-intercept are correct. Find the range of each function.

11.  $y = 3 \sin x$

Amplitude:  $A = 3$

Period:  $P = 2\pi$

Range:  $\{-3 \leq y \leq 3\}$

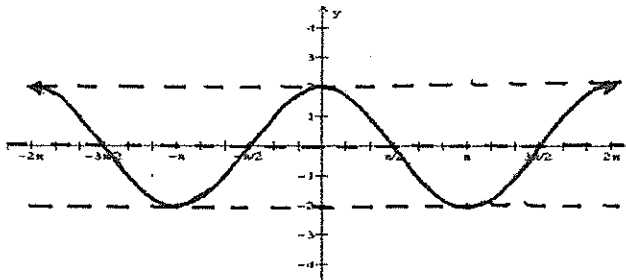


12.  $y = 2 \cos x$

Amplitude:  $A = 2$

Period:  $P = 2\pi$

Range:  $\{-2 \leq y \leq 2\}$

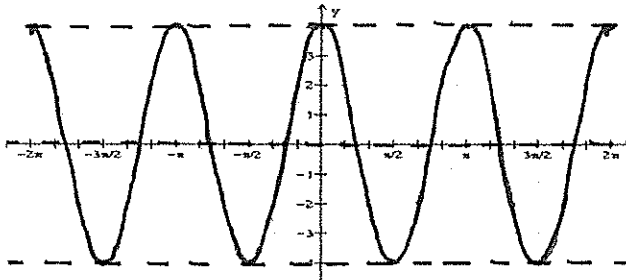


13.  $y = 4 \cos 2x$

Amplitude:  $A = 4$

Period:  $P = \pi$

Range:  $\{-4 \leq y \leq 4\}$

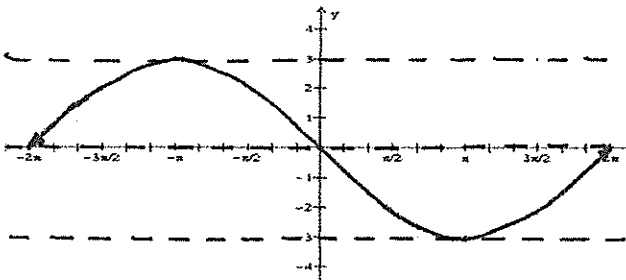


14.  $y = -3 \sin \frac{1}{2}x$

Amplitude:  $A = 3$

Period:  $P = 4\pi$

Range:  $\{-3 \leq y \leq 3\}$



15.  $y = -2 \cos(3x)$

Amplitude:  $A = 2$

Period:  $P = \frac{2\pi}{3}$

Range:  $\{-2 \leq y \leq 2\}$

