

## **HOMEWORK 8-3**

- |      |                          |
|------|--------------------------|
| 1. a | 5 & 6. see graphs in the |
| 2. c | following slides         |
| 3. a |                          |
| 4. c |                          |

Name: Key  
 Period: \_\_\_\_\_

Algebra 2 Homework 11-3

Choose the best answer.

1. The graph of which equation has amplitude 2 and period  $\pi$ ?

a. ☒  $f(x) = 2\cos(2x)$

c.  $f(x) = 2\sin|x|$

b.  $f(x) = \frac{1}{2}\sin(2x)$

d.  $f(x) = 2\cos\left(\frac{1}{2}x\right)$

$|A| = 2$   
 $Per = \frac{\pi}{1} = \frac{2\pi}{|w|}$   
 $2\pi = \pi/|w|$   
 $2 = |w|$

2. The graph of which equation has amplitude of 1 and period  $\pi$ ?

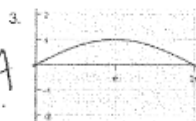
a.  $f(x) = \tan|x|$

c. ☒  $f(x) = \sin(2x)$

b.  $f(x) = \sin\left(\frac{1}{2}x\right)$

d.  $f(x) = \cos(x)$

$Per = \frac{\pi}{1} = \frac{2\pi}{|w|}$   
 $\pi |w| = 2\pi$   
 $|w| = 2$



Which is the equation of this graph?

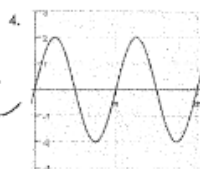
a. ☒  $f(x) = \sin\left(\frac{1}{2}x\right)$

c.  $f(x) = \cos\left(\frac{1}{2}x\right)$

b.  $f(x) = \sin(2x)$

d.  $f(x) = \cos(2x)$

$\frac{1}{2}$  cycle in  $2\pi$   
 $\uparrow$   
 $|w|$  goes through  $(0, 0)$   
 so... sine fn.



Which is the equation of this graph?

a.  $f(x) = 2\sin\left(\frac{1}{2}x\right)$

c. ☒  $f(x) = 2\sin(2x)$

b.  $f(x) = \frac{1}{2}\cos(2x)$

d.  $f(x) = 2\cos(2x)$

sine fn amp = 2  
 2 cycles in  $2\pi$   
 $\uparrow$   
 $|w|$

5. Graph  $f(x) = -\sin(2x)$  for  $-\pi \leq x \leq \pi$ . Show all work as done in class.

$$\text{amp} = |-1| = 1$$

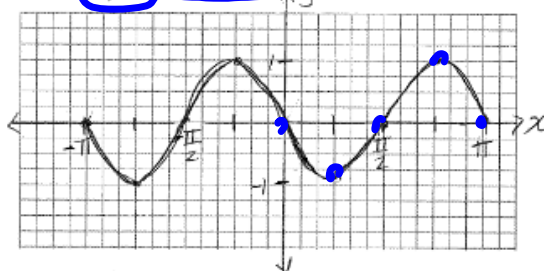
$$\text{Range} = [-1, 1]$$

$$\text{freq} = \frac{2}{2\pi} \text{ (2 cycles in } 2\pi)$$

$$\text{Per} = \frac{2\pi}{2} = \pi \text{ (length of 1 cycle)}$$

$$\text{Xsel} = \pi/4$$

$$\text{pattern} = -1(0, 1, 0, -1, 0) \\ (0, -1, 0, 1, 0)$$



x	0	$\pi/4$	$\pi/2$	$3\pi/4$	$\pi$
y	0	-1	0	1	0

6. Graph  $f(x) = \frac{1}{2}\cos\left(\frac{1}{2}x\right)$  for  $0 \leq x \leq 2\pi$ . Show all work as done in class.

$$\text{amp} = \left|\frac{1}{2}\right| = \frac{1}{2}$$

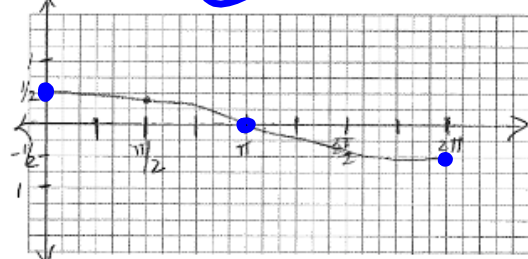
$$\text{Range} = \left[-\frac{1}{2}, \frac{1}{2}\right]$$

$$\text{Freq} = \frac{1/2}{2\pi} = \frac{1}{4} \text{ cycle in } 2\pi$$

$$\text{Per} = \frac{2\pi}{1/2} = 4\pi$$

$$\text{Xsel} = \frac{4\pi}{4} = \pi$$

$$\text{pattern} = \frac{1}{2}(1, 0, -1, 0, 1) \\ = \left(\frac{1}{2}, 0, -\frac{1}{2}, 0, \frac{1}{2}\right)$$



x	0	$\pi$	$2\pi$	$3\pi$	$4\pi$
y	$\frac{1}{2}$	0	$-\frac{1}{2}$	0	$\frac{1}{2}$

**How will this affect you?**

Beginning **January 28, 2019**, the people in your classes who normally get your Remind messages as texts will no longer receive these messages if they have Verizon Wireless as their phone carrier.

**What can you do?**

To make sure people in your classes continue receiving your messages, **ask them to [download the mobile app](#) or [enable email notifications](#)—both of which are free of charge**. Our team's also working hard on a solution that allows your classes to continue to use Remind by text, and we'll share more details with you before January 28.

In the meantime, we'll keep fighting to make sure educators, students, and parents have access to effective communication. To do this, **we need your help**: If using Remind has made a positive impact in your classroom, at your school, or anywhere in between, please ask Verizon to reverse the fee here: [www.remind.com/verizon-fee](http://www.remind.com/verizon-fee)

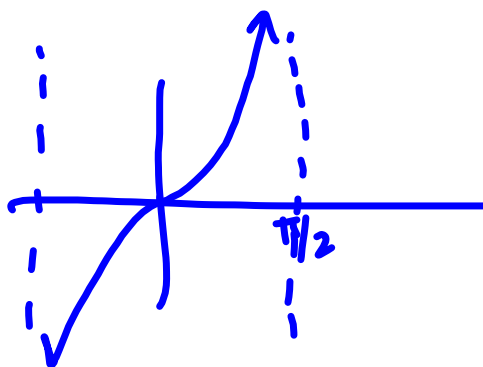
Day 4: Graphing with changes in amplitude, frequency and period

**Warm-Up:**

Regents Question:

As  $x$  increases from 0 to  $\pi/2$ , the graph of the equation  $y = \tan x$  will

- (1) increase from 0 to 2
- (2) decrease from 0 to -2
- (3) increase without limit
- (4) decrease without limit



1. Graph  $f(x) = -2\cos(4x)$  in the interval  $0 \leq x \leq 2\pi$

① amp =  $|-2| = 2 \Rightarrow$  Range  $[-2, 2]$

② freq = 4 cycles in  $2\pi$

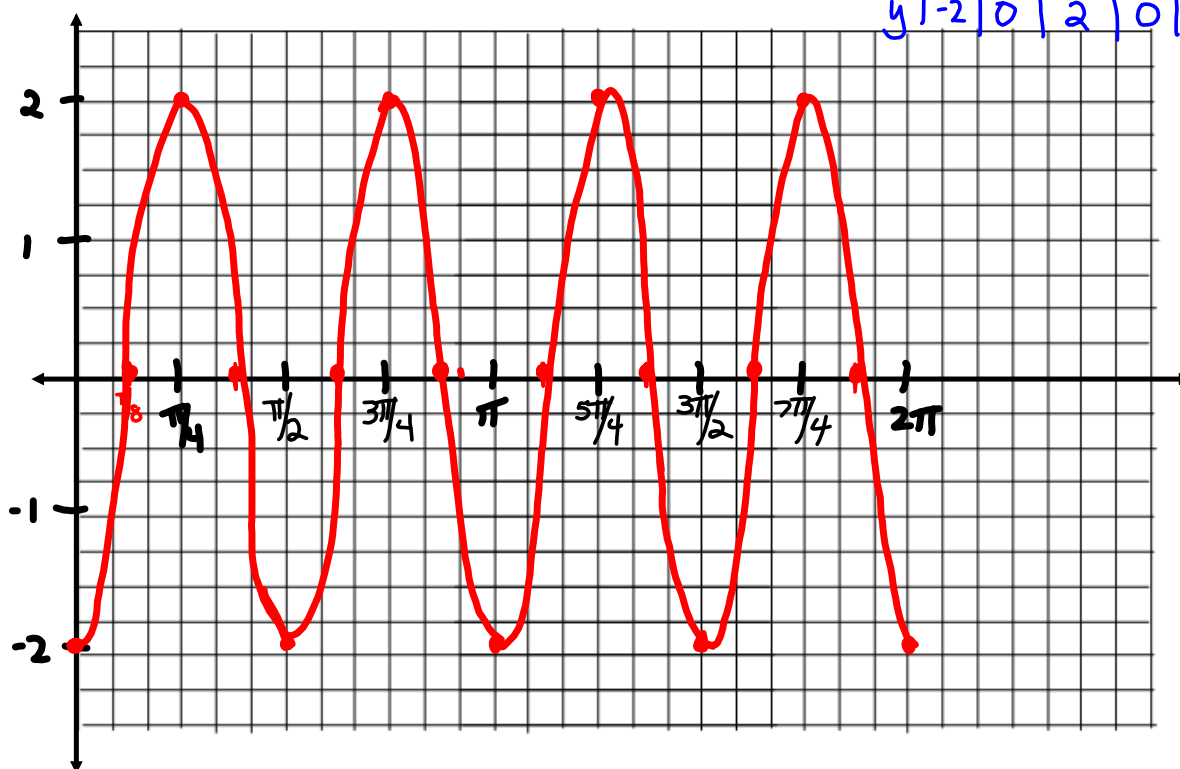
③ per =  $\frac{2\pi}{4} = \frac{\pi}{2}$

④ X interval =  $\frac{\text{per}}{4} = \frac{\pi/2}{4} = \frac{\pi}{8}$

⑤ Pattern =  $-2(1, 0, -1, 0, 1) = (-2, 0, 2, 0, -2)$



x	0	$\pi/8$	$2\pi/8$	$3\pi/8$	$4\pi/8$
y	-2	0	2	0	-2



2. Graph one complete cycle of the function  $f(x) = 3 \cos(\pi/6x)$ .

① Amp = 3

② Freq =  $\pi/6$  cycles in  $2\pi$

③ Per =  $2\pi/\omega = 2\pi/(\pi/6) = 2\pi(\frac{6}{\pi}) = \frac{12\pi}{\pi} = 12$

④ Xint =  $\frac{\text{Per}}{4} = \frac{12}{4} = 3$

⑤ Pattern =  $3(1, 0, -1, 0, 1) = (3, 0, -3, 0, 3)$

x	0	3	6	9	12
y	3	0	-3	0	3

