

Homework 8-1

1. See graph

7. See graph

2a. 1 2b. -1

8a. 1 8b. -1

3. $[-1, 1]$ 9. $[-1, 1]$ 4. $\{ \pi/2 \}$ 10. $\{ 0, 2\pi \}$ 5. $\{ 3\pi/2 \}$ 11. $\{ \pi \}$ 6a. $(0, \frac{\pi}{2})$ and $(\frac{3\pi}{2}, 2\pi)$ 12a. $(\pi, 2\pi)$ 6b. $(\frac{\pi}{2}, \frac{3\pi}{2})$ 12b. $(0, \pi)$

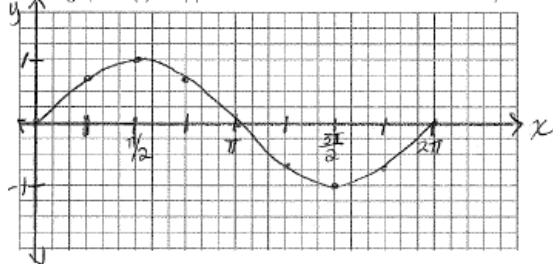
Feb 6-6:27 PM

Name: Key

Algebra 2 Homework 11-1

Period: _____

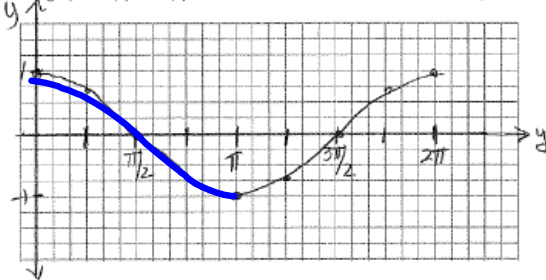
1. Sketch the graph of
- $f(x) = \sin(x)$
- in the interval
- $0 \leq x \leq 2\pi$
- . Be sure to label your axis as in class.



2. a. What is the largest value of $f(x) = \sin(x)$? 1
 b. What is the smallest value of $f(x) = \sin(x)$? -1
3. What is the range of $f(x) = \sin(x)$? $[-1, 1]$ or $\{y | -1 \leq y \leq 1\}$
4. For what value(s) of x in the interval $0 \leq x \leq 2\pi$ is $\sin(x) = 1$? $x = \pi/2$
5. For what value(s) of x in the interval $0 \leq x \leq 2\pi$ is $\sin(x) = -1$? $x = 3\pi/2$
6. Between what values in the interval $0 \leq x \leq 2\pi$ is $\sin(x)$:
 a. increasing? $(0, \frac{\pi}{2})$ and $(\frac{3\pi}{2}, 2\pi)$
 b. decreasing? $(\frac{\pi}{2}, \frac{3\pi}{2})$

Feb 6-6:25 PM

7. Sketch the graph of $f(x) = \cos(x)$ in the interval $0 \leq x \leq 2\pi$. Be sure to label your axis as in class.



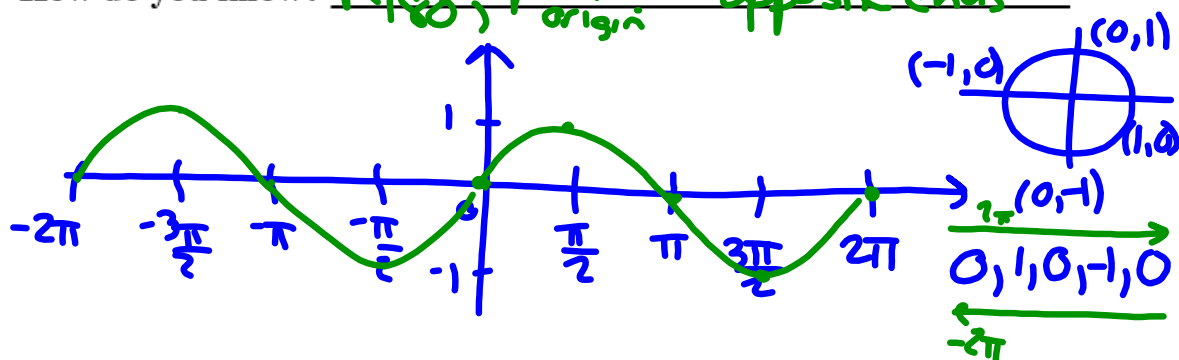
8. a. What is the largest value of $f(x) = \cos(x)$? 1
 b. What is the smallest value of $f(x) = \cos(x)$? -1
9. What is the range of $f(x) = \cos(x)$? $[-1, 1]$
10. For what value(s) of x in the interval $0 \leq x \leq 2\pi$ is $\cos(x) = 1$? $\{0, 2\pi\}$
11. For what value(s) of x in the interval $0 \leq x \leq 2\pi$ is $\cos(x) = -1$? $\{\pi\}$
12. Between what values in the interval $0 \leq x \leq 2\pi$ is $\cos(x)$:
- a. increasing? $(\pi, 2\pi)$
 b. decreasing? $(0, \pi)$

Feb 6-6:27 PM

Day 2: Review Basic Sine, Cosine and Tangent Graphs
Amplitude, Frequency, Period, Domain & Range, x interval

Feb 6-6:28 PM

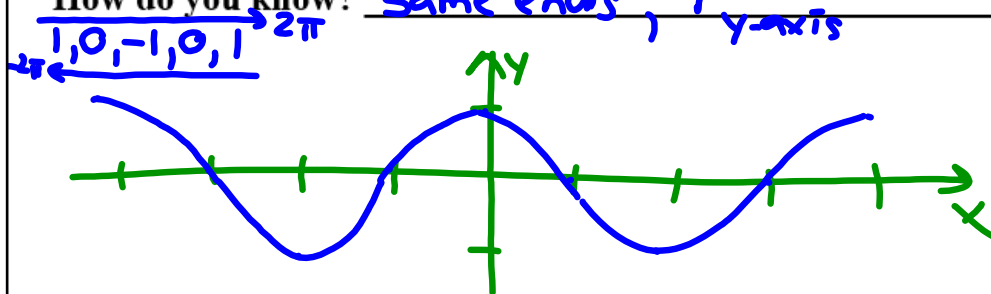
Sketch $f(x) = \sin(x)$. Is this function odd or even? odd
 How do you know? Rise, origin, opposite ends



Feb 6-6:29 PM

Sketch $f(x) = \cos(x)$. Is this function odd or even? even

How do you know? same ends, y-axis



Feb 6-6:29 PM

Sketch $f(x) = \tan(x)$. Is this function odd or even? odd
 How do you know? opposite ends

Feb 6-6:29 PM

$$f(x) = \underline{A} \sin(\underline{\omega}(x)) + \underline{k} \quad (0, 1, 0, -1, 0)$$

$$f(x) = \underline{A} \cos(\underline{\omega}(x)) + \underline{k} \quad (1, 0, -1, 0, 1)$$

$|A| \rightarrow$ amplitude $\rightarrow$ height from the mean to the maximum
 "how high/low" or minimum

$\frac{|\omega|}{2\pi} \rightarrow$ frequency $\rightarrow$ number of complete sin/cos cycles in a
 "how many" a given interval

$\frac{2\pi}{|\omega|} \rightarrow$ period $\rightarrow$ how long it takes to see 1 cycle of sin/cos
 "how long"

$y = k \rightarrow$ mean $\rightarrow$ midline

interval on x-axis = distance between your pattern points
 x-scl on the x-axis (Where you are going
 to plot your values.)

period
4

Feb 6-6:30 PM

On calculator:

$f(x) = \sin(x)$

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

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

1 cycle in 2π
 $\frac{1}{2}$ cycle in 2π
 2 cycles in 2π

Window

x-min -2π

x-max 2π

On calculator:

$f(x) = \sin(x)$

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

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

amplitude of $[1, 1]$ x-scl $\frac{\pi}{2}$

" " $[\frac{1}{2}, \frac{1}{2}]$ y-min -2

" " $[2, 2]$ y-max 2

y-scl 1

On calculator:

$f(x) = \sin(x)$

$f(x) = -\sin(x)$

→ reflection over
the y-axis

Feb 6-6:30 PM

Amplitude with Frequency Changes

1. Given $f(x) = 3\sin(2x)$ tell $(0 \leq x \leq 2\pi)$ a. amplitude : 3 b. range $[-3, 3]$ c. frequency 2 cycles in 2π d. period $\frac{2\pi}{2} : \frac{2\pi}{2} : \pi$

e. interval on x-axis

x-scl $\frac{\pi}{4}$ period/4 : $\frac{\pi}{4}$

f. describe the following:

i. minimums → $(\frac{3\pi}{4}, -3)$ $(\frac{7\pi}{4}, -3)$ ii. maximums → $(\frac{\pi}{4}, 3)$ $(\frac{5\pi}{4}, 3)$ iii. zeros → $(0, 0)$ $(\frac{\pi}{2}, 0)$ $(\pi, 0)$ $(\frac{3\pi}{2}, 0)$ $(2\pi, 0)$

Feb 6-6:30 PM

2. Given $f(x) = -2 \cos(\frac{1}{2}x)$ tell $(-2\pi \leq x \leq 2\pi)$

- a. amplitude
- b. range
- c. frequency
- d. period
- e. interval on x-axis
- f. describe the following:
 - i. minimums $\rightarrow$
 - ii. maximums $\rightarrow$
 - iii. zeros $\rightarrow$

Feb 6-6:30 PM

Jan 11-7:04 AM