

# Graphs of trig functions

(horizontal) 1st coord (vertical) 2nd coord

①

Graphing a function: given  $f(x)$   
then you plot all points



Ex: sine - we know given an angle  $\theta$   
on unit circle,  $\sin(\theta) = 2^{\text{nd}} \text{ coord of that point}$

"anchor points"

$\theta$	$\sin(\theta)$	Plot point	on unit circle
0	2nd coord of (1,0) = 0	(0, 0)	
$\frac{\pi}{2}$	2nd coord of (0,1) = 1	$(\frac{\pi}{2}, 1)$	
$\pi$	2nd coord of (-1,0) = 0	$(\pi, 0)$	
$\frac{3\pi}{2}$	2nd coord of (0,-1) = -1	$(\frac{3\pi}{2}, -1)$	
$2\pi$	2nd coord of (1,0) = 0	$(2\pi, 0)$	
$\frac{5\pi}{2}$	_____ (0,1) = 1	$(\frac{5\pi}{2}, 1)$	
$3\pi$	_____ (-1,0) = 0	$(3\pi, 0)$	
$\frac{7\pi}{2}$	_____ (0,-1) = -1	$(\frac{7\pi}{2}, -1)$	
$4\pi$	_____ (1,0) = 0	$(4\pi, 0)$	

(2)

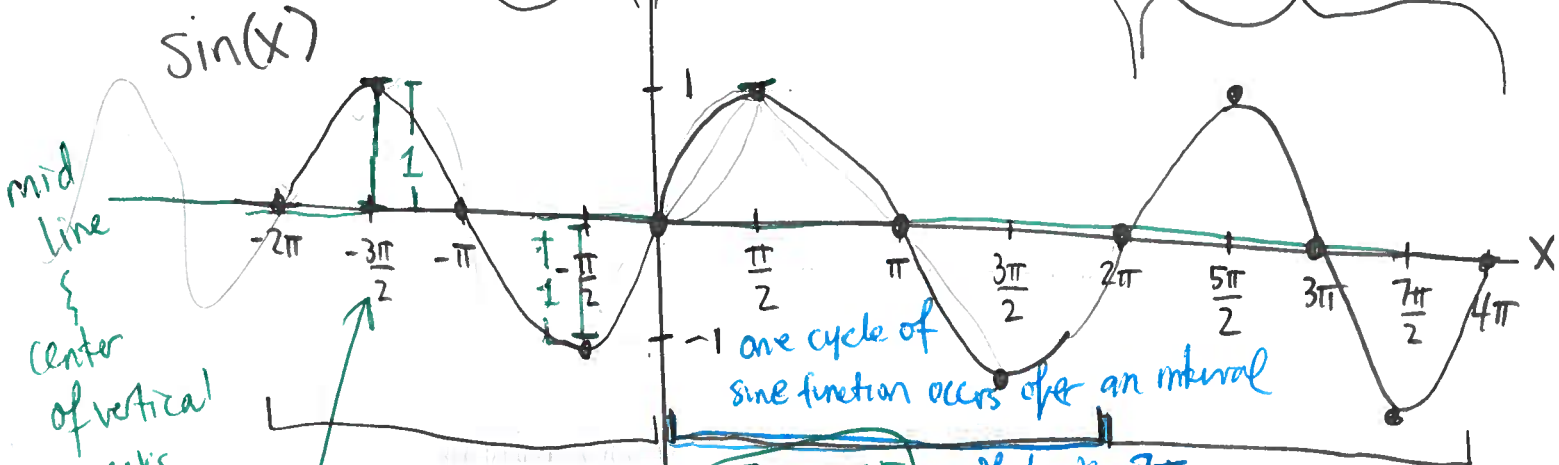
$\theta$	$\sin \theta$
$-\pi/2$	-1
$-\pi$	0
$-3\pi/2$	1
$-2\pi$	0

1st neg rotation



1st positive rotation

2nd pos rot



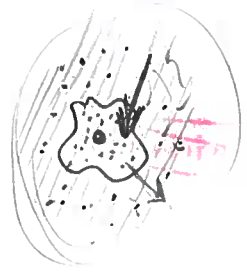
distance from mid line to a peak or valley is called

AMPLITUDE  
1

if length  $2\pi$

period of sine is  $2\pi$

This is called " $2\pi$  periodic", meaning it repeats itself after every horizontal distance of  $2\pi$ .



\*

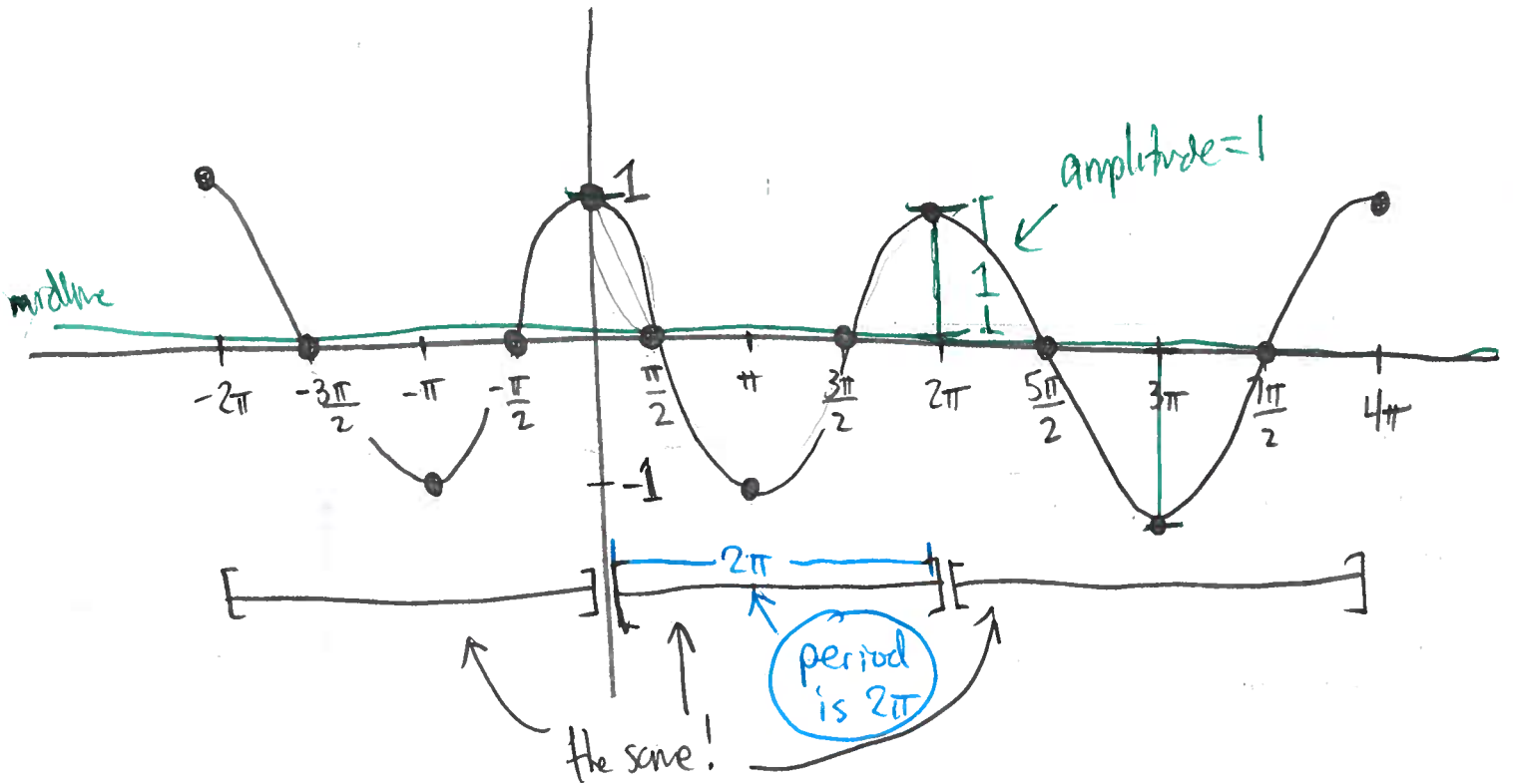
6.11 grade

# Plot cosine

(3)

$$-2\pi = -\frac{4\pi}{2}$$

$\theta$	$\cos(\theta)$
$-2\pi$	1st coord of $(1,0) = 1$
$-\frac{3\pi}{2}$	0
$-\pi$	-1
$-\frac{\pi}{2}$	0
0	1
$\frac{\pi}{2}$	0
$\pi$	-1
$\frac{3\pi}{2}$	0
$2\pi$	1
$\frac{5\pi}{2}$	0
$3\pi$	-1
$\frac{7\pi}{2}$	0
$4\pi$	1



cosine is also  $2\pi$ -periodic

Notice: the graphs are identical except they are horizontally shifted from each other!

↑  
"phase shifted"