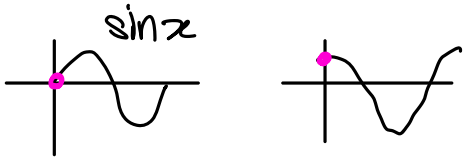
Name: _____ Date: _____

Learning Goal 5.1	Graphing primary trigonometric functions, including transformations and characteristics

Summary of Transformations of the form $y = a\sin(b(x-c)) + d$ and $y = a\cos(b(x-c)) + d$

Amplitude, a
vertical stretch

Phase Shift, c
horizontal translation.



Vertical Displacement, d
vertical translation

Maximum
$d+a$
if $a=1$ and $d=0$, then max is 1

Minimum
$d-a$
→ then the min $= -1$

Period, b
horizontal stretch
if $b=1$, Period is 2π

Period Start
$0+c$

Period End
$\frac{2\pi}{b} + c$

$-4\sin 2(x-5)+5$

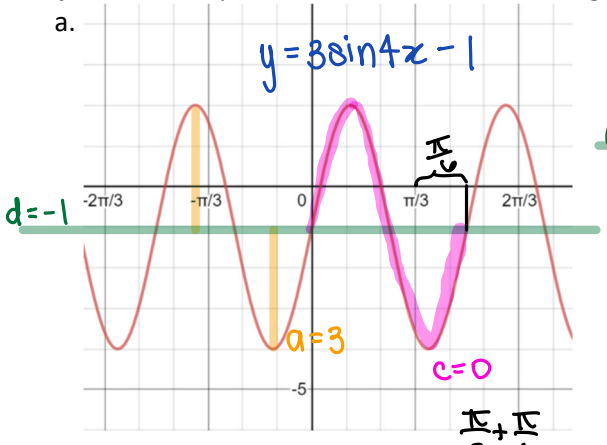
Example Fill out the table for the function $y = 4\sin(2x - 10) + 5$.

Vertical Displacement	Amplitude	Max	Min
5	4	$5+4=9$	$5-4=1$

Period	Phase Shift	Period Start	Period End
$\frac{2\pi}{2} = \pi$	→ 5	$0+5=5$	$\pi+5$

Example Find an equation for each of the following functions:

a.



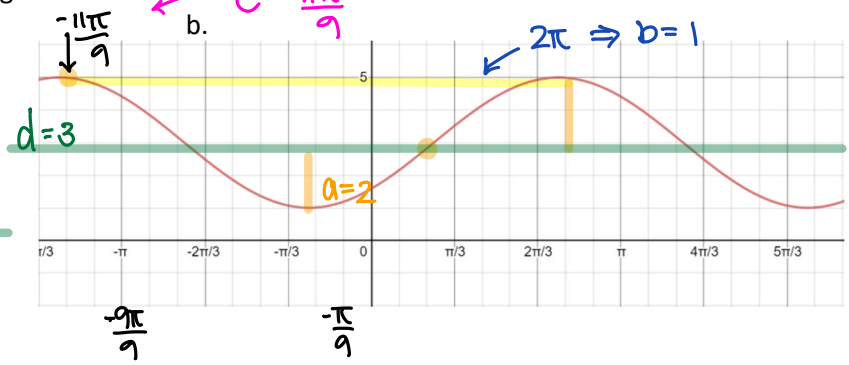
$2\pi \times \frac{1}{2\times 2} = \frac{\pi}{2}$

$b = 4$

$\frac{\pi}{3} + \frac{\pi}{6}$

$= \frac{2\pi}{6} + \frac{\pi}{6} = \frac{3\pi}{6} = \frac{\pi}{2}$

b. $c = \frac{11\pi}{9}$



$y = 2\cos\left(x + \frac{11\pi}{9}\right) + 3$

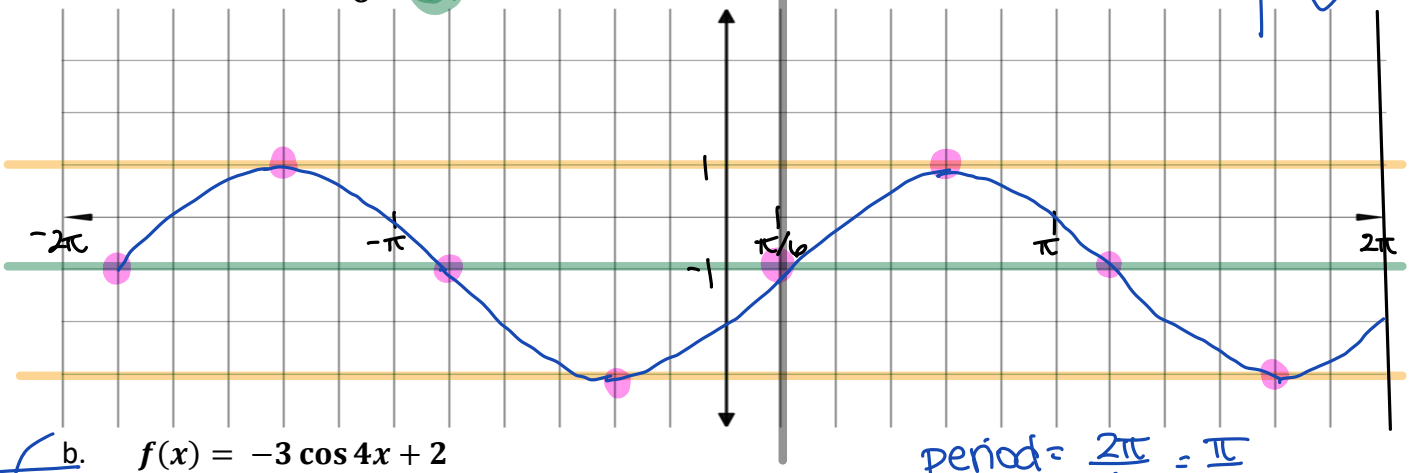
Assignment: p. 250 # 1 – 9, 11, 12, 14 – 16, 26, 27, C2

Quiz Next Day!

Example Sketch two cycles of the graph of the functions below. State the coordinates of 5 points on the graph.

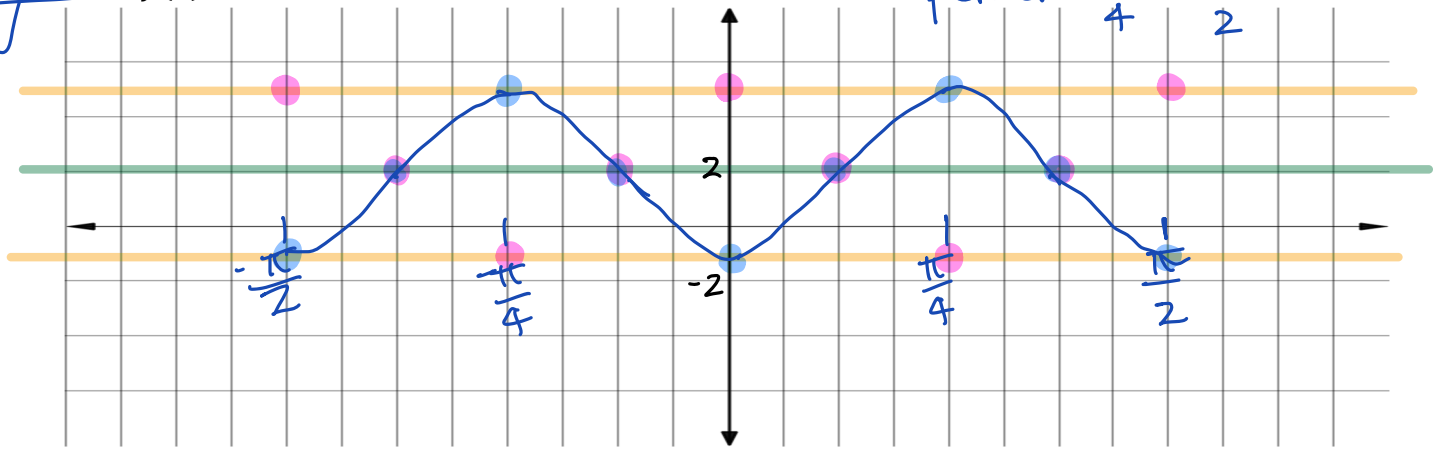
a. $y = 2\sin\left(x - \frac{\pi}{6}\right) - 1$

$b = 1 \Rightarrow$ period $= 2\pi$

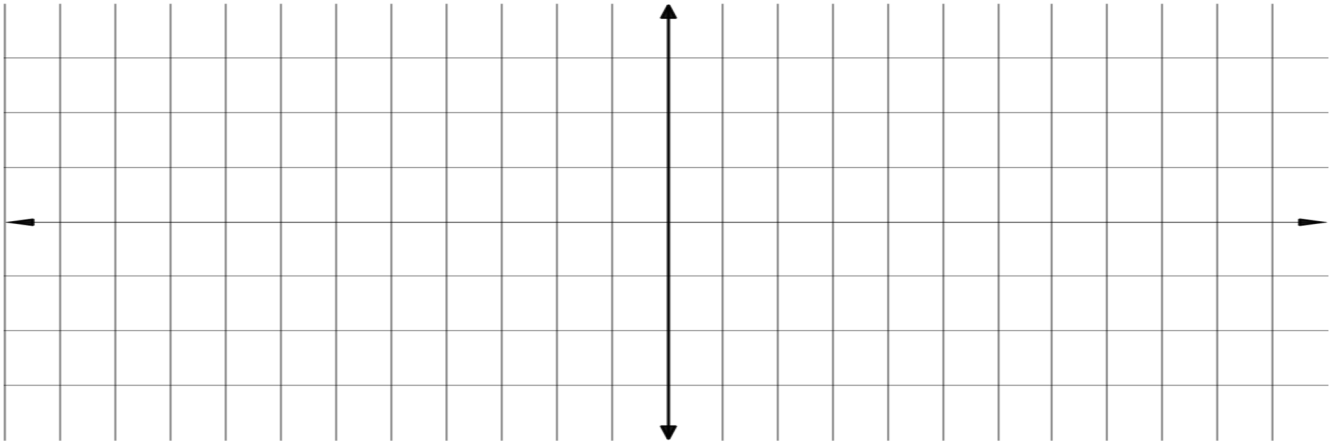


b. $f(x) = -3\cos 4x + 2$

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



c. $g(x) = 4\cos\frac{2\pi}{3}(x+1) + 2$



$y = 2\sin\left(x - \frac{\pi}{6}\right) - 1$