Spiral Review:

1.) Find all six trigonometric functions.

(-1, -5)

$r = \sqrt{(-1)^2+(-5)^2}$

$r = \sqrt{26}$

$\sin\theta = \frac{-5\sqrt{26}}{26}$ $\quad \csc\theta = \frac{\sqrt{26}}{-5}$

$\cos\theta = -\frac{\sqrt{26}}{26}$ $\quad \sec\theta = -\sqrt{26}$

$\tan\theta = 5$ $\quad \cot\theta = \frac{1}{5}$

2.) Find the exact value.

a.) $\tan\frac{5\pi}{6}$ II $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$\frac{\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = \boxed{-\frac{\sqrt{3}}{3}}$

b.) $\cos\frac{\pi}{3}$ I $\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

$\boxed{\frac{1}{2}}$

c.) $\sec\left(-\frac{11\pi}{6}\right)$ I $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$\boxed{\frac{2\sqrt{3}}{3}}$

d.) $\csc\pi$ x-axis $(-1, 0)$

$\frac{1}{0} = \boxed{\text{undefined}}$

p. 292 Graphing Sine and Cosine (day2)

$y = d + a\sin(bx-c)$

or

$y = a\sin(bx-c) + d$

a = amplitude |a|
* vertical *

b = use to find period: $\frac{2\pi}{b}$
* increments $\frac{\text{period}}{4}$

c = phase shift (right/left)
x starts @ $\frac{c}{b}$

d = vertical shift (up/down)

Students will be able to describe the transformations of the graph.

Example 1: Describe the relationship between the graphs of f and g. Consider the amplitude, periods and shifts.

a.) $f(x)=\cos x$
$g(x)=\cos(x-\pi)$

phase shift to the right π units

b.) $f(x)=\sin 3x$
$g(x)=\sin(-3x)$

reflected over the y-axis

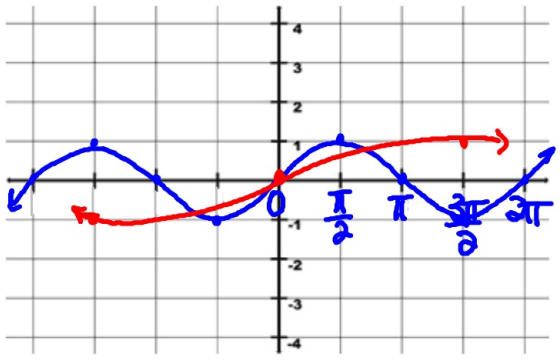
Students will be able to sketch the graphs of both functions and see the transformation.

Example 2: Sketch the graphs of f and g in the same coordinate plane (include two full periods).

a.) $f(x)=\sin x$
$g(x)=\sin\frac{x}{3}$

x	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
sinx	0	1	0	-1	0

amp: 1
period: 2π



x	0	$\frac{3\pi}{2}$	3π	$\frac{9\pi}{2}$	6π
$\sin\frac{x}{3}$	0	1	0	-1	0

amp: 1
period: $\frac{2\pi}{\frac{1}{3}}=6\pi$
increment: $\frac{6\pi}{4}=\frac{3\pi}{2}$

Students will be able to sketch the graphs of both functions and see the transformation.

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

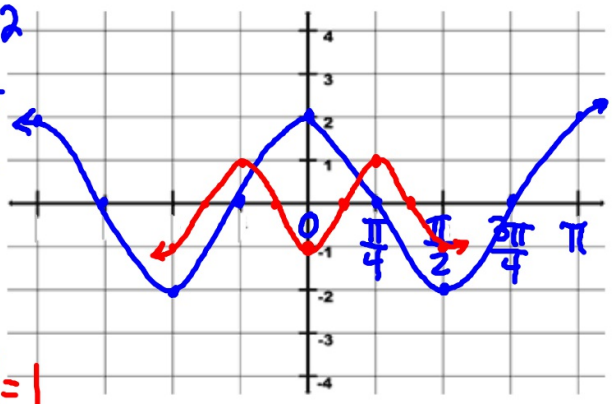
$g(x)= -\cos 4x$

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

amp: $|2|=2$

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

increm: $\frac{\pi}{4}$



x	0	$\frac{\pi}{8}$	$\frac{\pi}{4}$	$\frac{3\pi}{8}$	$\frac{\pi}{2}$
$\cos 4x$	1	0	-1	0	1
$-\cos 4x$	-1	0	1	0	-1

amp: $|-1|=1$

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

increm: $\frac{\frac{\pi}{2}}{4}=\frac{\pi}{8}$

Students will be able to graph the function including two full terms.

Example 3: Sketch the graph of the function (include two full periods).

a.) $y = 2\cos(x+\frac{\pi}{2})$

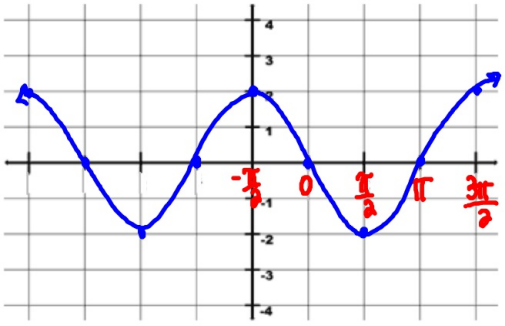
amp: $|2|=2$

period: $\frac{2\pi}{1}=2\pi \rightarrow$ increm: $\frac{\pi}{2}$

phase: left

x start @ $\frac{c}{b}=\frac{-\frac{\pi}{2}}{1}=-\frac{\pi}{2}$

vertical: none



x	$-\frac{\pi}{2}$	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$
$\cos(x+\frac{\pi}{2})$	1	0	-1	0	1
$2\cos(x+\frac{\pi}{2})$	2	0	-2	0	2

Students will be able to graph the function including two full terms.

b.) $y = -10\cos\frac{\pi x}{6}$

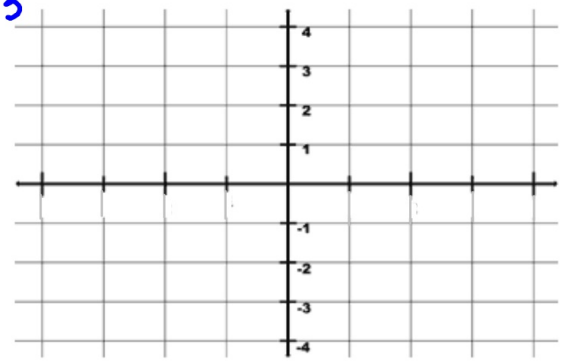
amp: $|-10| = 10$

period: $\frac{2\pi}{\frac{\pi}{6}} = 12 \rightarrow$ increm: $\frac{12}{4} = 3$

phase: none

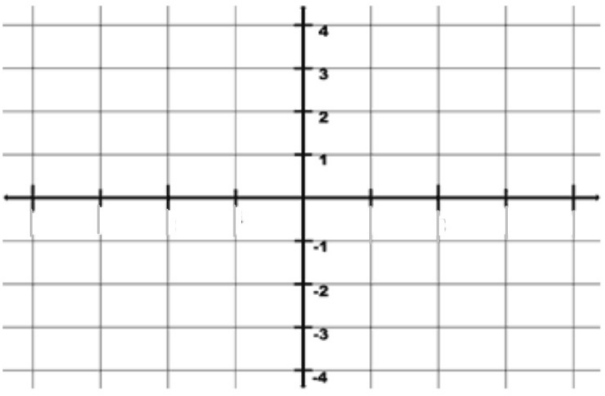
vertical: none

x	0	3	6	9	12
$\cos\frac{\pi x}{6}$	1	0	-1	0	1
$-10\cos\frac{\pi x}{6}$	-10	0	10	0	-10



Students will be able to graph the function including two full terms.

c.) $y = -4\sin\left(\frac{2}{3}x - \frac{\pi}{3}\right)$



Students will be able to graph the function including two full terms.

d.) $y = 3\cos(\frac{\pi x}{2} + \frac{\pi}{2}) - 2$

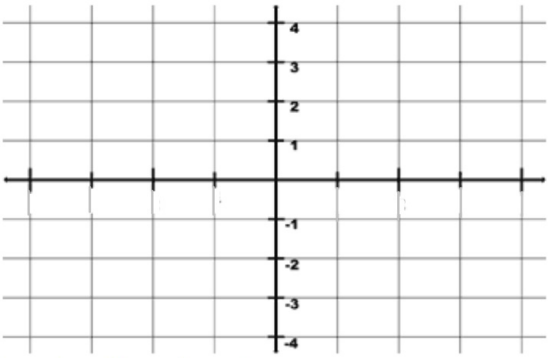
amp: $|3| = 3$

period: $\frac{2\pi}{\frac{\pi}{2}} = 4$ → increm: $\frac{4}{4} = 1$

phase: left

x starts @ $\frac{-\frac{\pi}{2}}{\frac{\pi}{2}} = -1$

vertical: down 2



x	-1	0	1	2	3
	1	0	-1	0	1
3cos...	3	0	-3	0	3
	1	-2	-5	-2	1

Turn-in:
p.299 (28, 36, 56)

HW:
p.299 (21-27,33-37,43-65 odds)