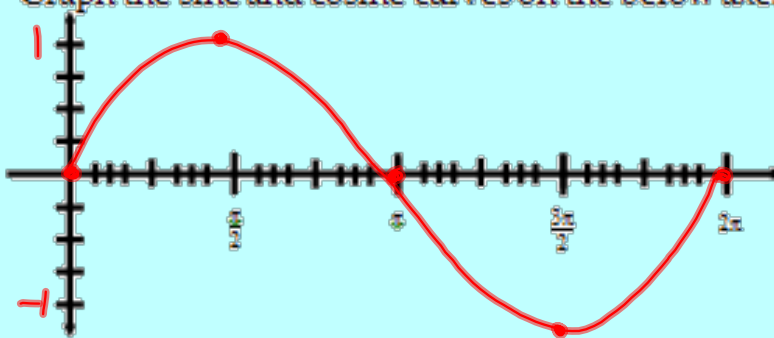
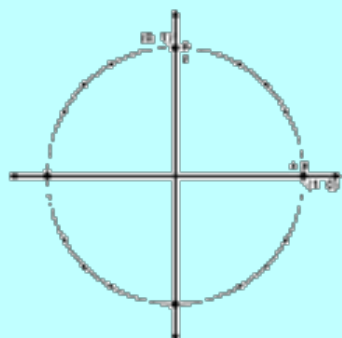


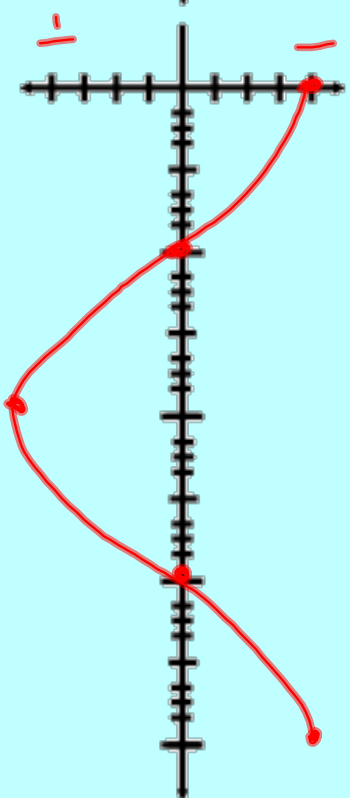
6.4 Graphs of Sine and Cosine

Graph the sine and cosine curves on the below axes...



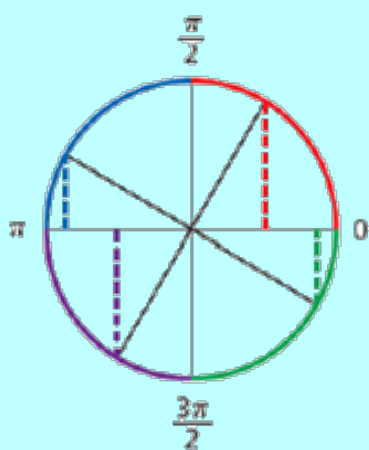
Sine Graph: Vertical
Component of Unit Circle

(y)

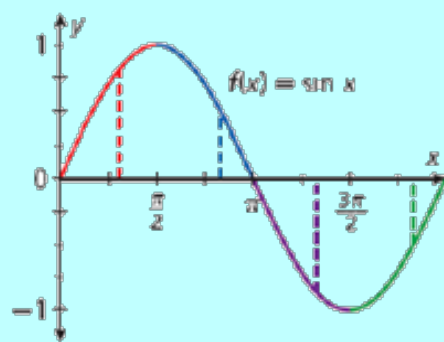


Cosine Graph: Horizontal
Component of Unit Circle

(x)

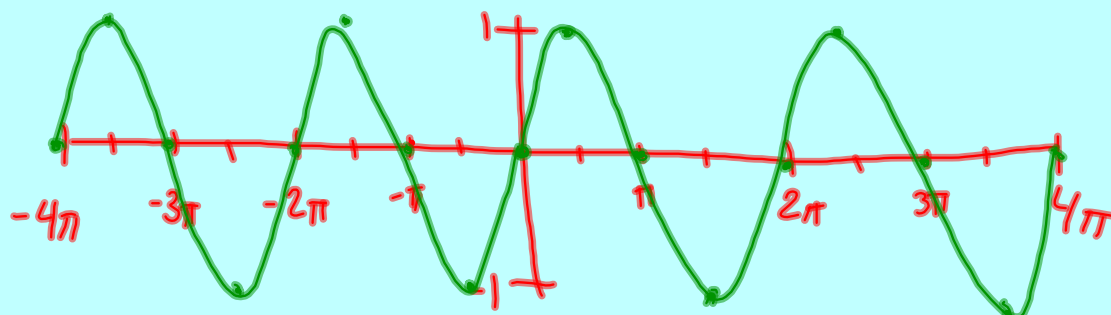


$x(=\theta)$	y
$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$
$\frac{5\pi}{6}$	$\frac{1}{2}$
$\frac{4\pi}{3}$	$-\frac{\sqrt{3}}{2}$
$\frac{11\pi}{6}$	$-\frac{1}{2}$



6.4 Graphs of Sine and Cosine

Without using the graphing calculator, sketch the graph of $y = \sin x$, $-4\pi \leq x \leq 4\pi$. Label each quadrant boundary.



Identify each of the following:

(you may need to look these terms up in your book or last 2 pages of handout)

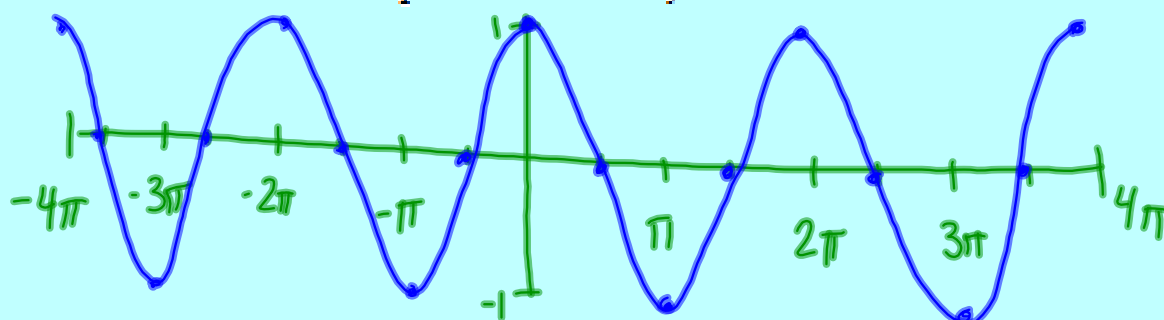
Domain: $(x \in \mathbb{R})$ $-4\pi \leq x \leq 4\pi$ Amplitude: 1 Type of symmetry:

Range: $-1 \leq y \leq 1$ Period: 2π

Now use your graphing calculator to find the values of the angle x below on the interval $0^\circ \leq x \leq 360^\circ$. There will be more than one answer for each problem. Identify the quadrants in which these angles are found.

		Angles	Reference Angle	Quadrants
1.	$\sin x = 0$	$\sin^{-1}(0) = \rightarrow 0^\circ$	xxx	xxx
2.	$\sin x = 1$	90°	xxx	xxx
3.	$\sin x = -\frac{1}{2}$	-30°	$30^\circ / \frac{\pi}{6}$	IV
4.	$\sin x = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$	45°	$45^\circ / \frac{\pi}{4}$	I
5.	$\sin x = -\frac{\sqrt{3}}{2}$	-60°	$60^\circ / \frac{\pi}{3}$	IV

Without using the graphing calculator, sketch the graph of $y = \cos x$, $-4\pi \leq x \leq 4\pi$. Label each quadrant boundary.



Identify each of the following:

(you may need to look these terms up in your book or last 2 pages of handout)

Domain: $(x \in \mathbb{R})$ $-4\pi \leq x \leq 4\pi$ Amplitude: 1 Type of symmetry:
 Range: $-1 \leq y \leq 1$ Period: 2π

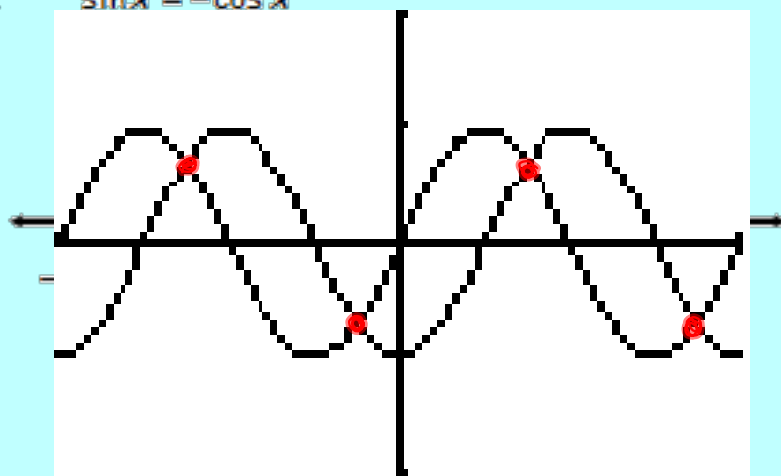
Now use your graphing calculator to find the values of the angle x below on the interval $0^\circ \leq x \leq 360^\circ$. There will be more than one answer for each problem. Identify the quadrants in which these angles are found.

		Angles	Reference Angle	Quadrants
1.	$\cos x = 0$	90°	\cancel{xxx}	\cancel{xxx}
2.	$\cos x = -1$	180°	\cancel{xxx}	\cancel{xxx}
3.	$\cos x = \frac{1}{2}$	60°	$60^\circ/\pi/3$	I
4.	$\cos x = -\frac{1}{\sqrt{2}} = -\frac{\sqrt{2}}{2}$	135°	$45^\circ/\pi/4$	II
5.	$\cos x = \frac{\sqrt{3}}{2}$	30°	$30^\circ/\pi/6$	I

6.4 Graphs of Sine and Cosine

Use a graphing calculator to sketch each of these equations/ inequalities for the domain $-2\pi \leq x \leq 2\pi$. Make sure your calculator is in *radian mode*. Put one side of the equation in y_1 and the other side in y_2 , then use 2^{nd} -Calc-Intersect to find the solutions to 3 significant figures. Set "window" to zoom #7 (trig).

1. $\sin x = -\cos x$



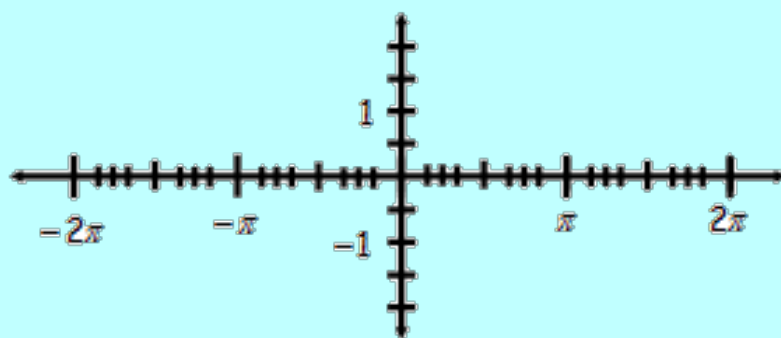
$$x = -3.93$$

$$-0.785$$

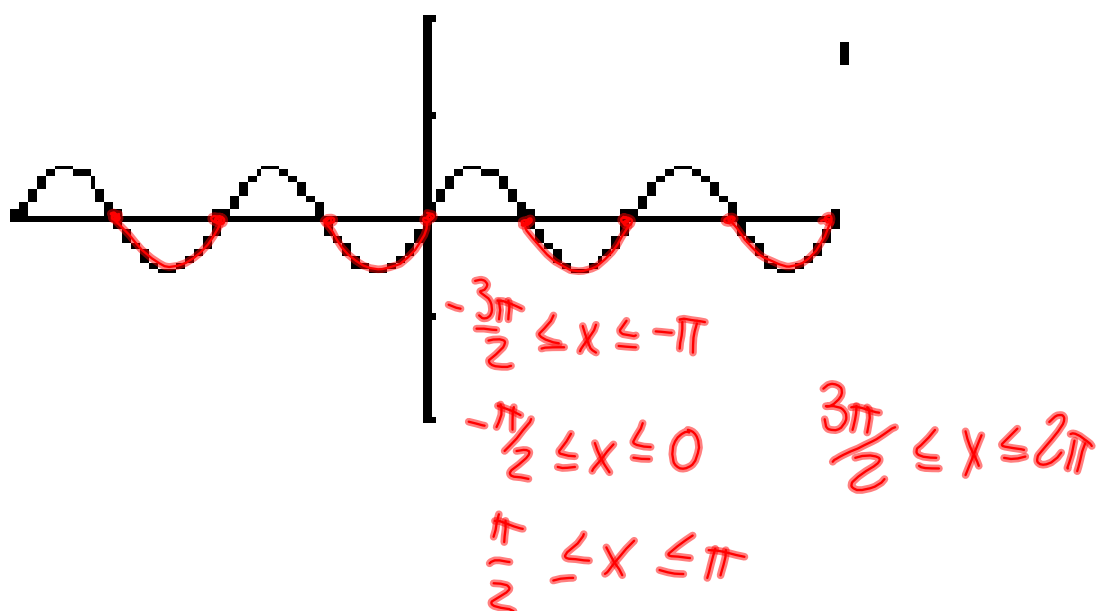
$$2.36$$

$$5.50$$

2. $\sin x + \cos x = 1$



4. $\sin x \cos x \leq 0$ [In other words, when is the graph of $y = \sin x \cos x$ below or intersecting the graph of $y = 0$?]



Homework Assignment:

Finish the Worksheet - draw your graphs as accurately as possible!