



IT'S A TRAP!



The solution set of the equation $\sqrt{2x+15} = x$ is

1) $\{5, -3\}$

2) $\{5\}$

~~3) $\{-3\}$~~

~~4) $\{\}$~~

$$\sqrt{2(5)+15} = 5$$

$$\sqrt{25} = 5 \checkmark$$

$$\sqrt{2(-3)+15} = -3$$

$$\sqrt{9} \neq -3$$

Warm Up: Solve for all values of p

$$\frac{3p}{p-5} - \frac{2}{p+3} = \frac{p}{p+3}$$

$$+ \frac{2}{p+3} \quad + \frac{2}{p+3}$$

$$\frac{3p}{p-5} = \frac{p+2}{p+3}$$

$$3p(p+3) = (p-5)(p+2)$$

$$3p^2 + 9p = p^2 - 3p - 10$$

$$-p^2 + 3p + 10 = 0$$

$$2p^2 + 12p + 10 = 0$$

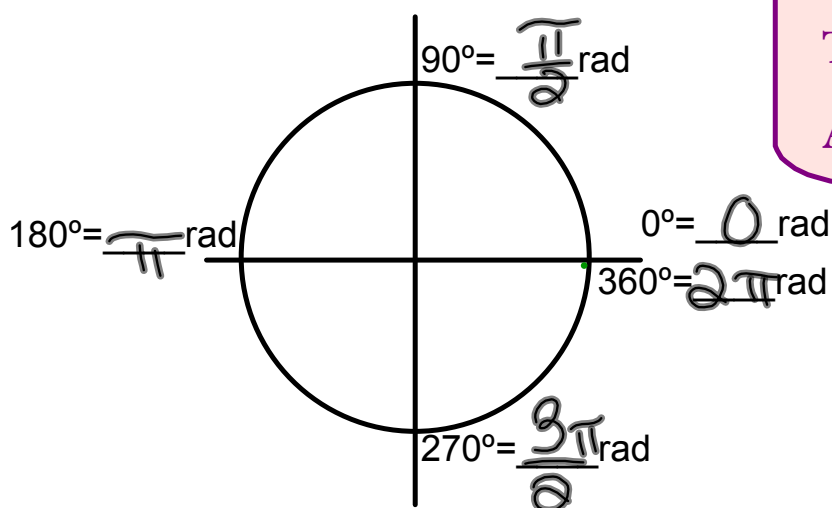
$$p^2 + 6p + 5 = 0$$


$$(p+5)(p+1) = 0$$

$$p = \{5, -1\}$$

Graphing Sine and Cosine

...remember the unit circle...

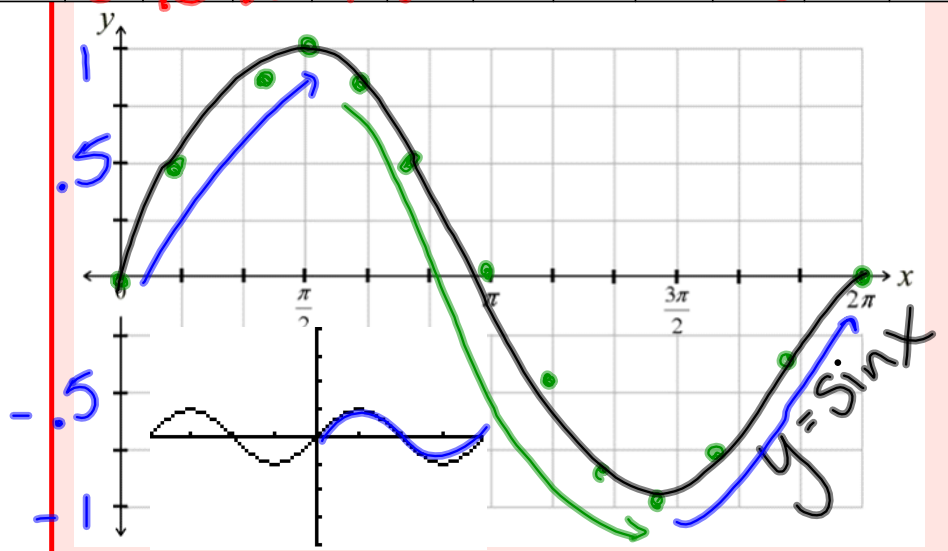


Trig graphs are  ALWAYS in radians!!!

Alg (x,y)
Trig (cos θ , sin θ)

Graphing Sine


x (degrees)	0	30	60	90	120	150	180	210	240	270	300	330	360
x (radians)	0	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{11\pi}{6}$	2π
y	0	.5	.866	1	.866	.5	0	-.5	-.866	-1	-.866	-.5	0



In the interval $[0, 2\pi]$, for what values of x does $y = \sin x$ increase and for what values of x does it decrease?

inc: 0 to $\frac{\pi}{2}$ & $\frac{3\pi}{2}$ to 2π

dec: $\frac{\pi}{2}$ to $\frac{3\pi}{2}$

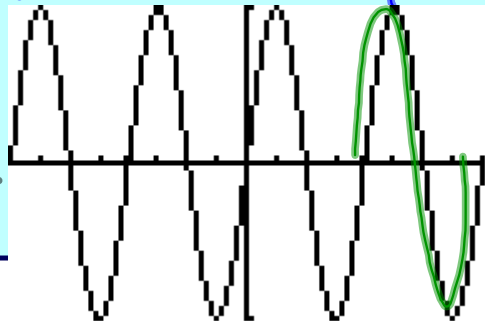
cycle- includes a maximum, 
 a minimum & must start/end @
 Same height

periodic function-

a graph that is its own image
 under a translation
 (Repeats w/ a pattern)

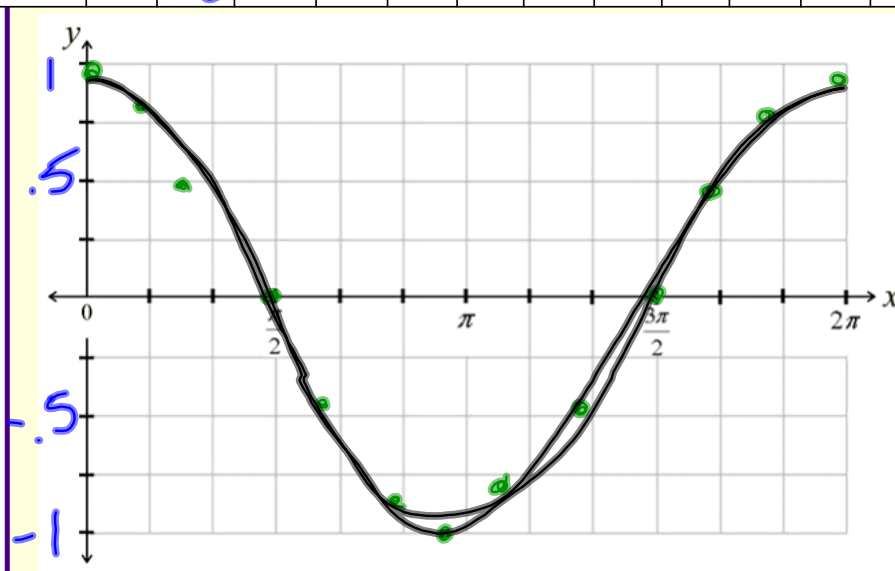
period- length of one full
 cycle

Period of $y = \sin x$ is 2π



Graphing Cosine

x (radians)	0	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{11\pi}{6}$	2π
y	1	.86	.5	0	-.5	-.86	-1	-.86	-.5	0	.5	.86	1



For what values of x in the interval $[0, 2\pi]$ does $y = \cos x$ have a maximum value and for what values does x have a minimum value?

$$\text{max: } x = 0, 2\pi$$

$$\text{min: } x = \pi$$

How does the unit circle relate to sine and cosine curves?

HW: p. 440 #3-6; p. 446 #3-6

Developing Skills

- P. 440**
3. Sketch the graph of $y = \sin x$ in the interval $0 \leq x \leq 4\pi$.
 - a. In the interval $0 \leq x \leq 4\pi$, for what values of x is the graph of $y = \sin x$ increasing?
 - b. In the interval $0 \leq x \leq 4\pi$, for what values of x is the graph of $y = \sin x$ decreasing?
 - c. How many cycles of the graph of $y = \sin x$ are in the interval $0 \leq x \leq 4\pi$?
 4. What is the maximum value of y on the graph of $y = \sin x$?
 5. What is the minimum value of y on the graph of $y = \sin x$?
 6. What is the period of the sine function?
 - ~~7. Is the sine function one-to-one? Justify your answer.~~

Developing Skills

- P. 446**
3. Sketch the graph of $y = \cos x$ in the interval $0 \leq x \leq 4\pi$.
 - a. In the interval $0 \leq x \leq 4\pi$, for what values of x is the graph of $y = \cos x$ increasing?
 - b. In the interval $0 \leq x \leq 4\pi$, for what values of x is the graph of $y = \cos x$ decreasing?
 - c. How many cycles of the graph of $y = \cos x$ are in the interval $0 \leq x \leq 4\pi$?
 4. What is the maximum value of y on the graph of $y = \cos x$?
 5. What is the minimum value of y on the graph of $y = \cos x$?
 6. What is the period of the cosine function?
 - ~~7. Is the cosine function one-to-one? Justify your answer.~~

