

Cornell Notes

Topic/Objective:

Name:



13.2 Solving

Class/Period:

Equations using the Unit  
Circle

Date:

4  
5/15/17

Essential Question:

What kind of equations can be solved using trig?

Questions:

Notes:

We know  $\sin 30^\circ = \frac{1}{2}$ ,  $\sin \pi/6 = \frac{1}{2}$   
 $\sin -210^\circ = \frac{1}{2}$

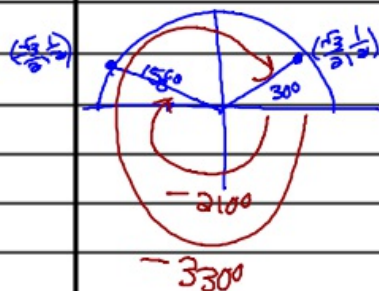
what if:  $\sin x = \frac{1}{2}$  exact answer

$$x = \sin^{-1}\left(\frac{1}{2}\right)$$

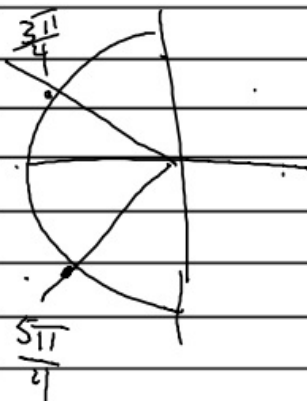
"x is the angle whose sine is  $\frac{1}{2}$ "

we'll restrict the domain -  
 Radians or degrees? Domain will tell!

Ex) Find x if  $\sin x = \frac{1}{2}$ ,  $-360^\circ \leq x \leq 360^\circ$



$$x = -210^\circ, -330^\circ, 30^\circ, 150^\circ$$



You try: Solve  $\cos x = -\frac{\sqrt{2}}{2}$ ,  $-2\pi \leq x \leq 2\pi$

$$\frac{3\pi}{4}, \frac{5\pi}{4}, -\frac{3\pi}{4}, -\frac{5\pi}{4}$$

Questions:

Notes:

Ex) Solve  $\sin(2x) = \frac{\sqrt{2}}{2}$   $0^\circ \leq x \leq 360^\circ$

if  $0 \leq x \leq 360$ , then  $0 \leq 2x \leq 720$

$$2x = 45^\circ, 135^\circ, 405^\circ, 495^\circ$$

$$x = 22.5^\circ, 67.5^\circ, \frac{405}{2}, \frac{495}{2}$$

Ex)  $2\sin^2 x + 5\sin x - 3 = 0$

$$(2\sin x - 1)(\sin x + 3) = 0$$

$$2\sin x - 1 = 0$$

$$2\sin x = 1$$

$$\sin x = \frac{1}{2}$$

$$x = 30^\circ$$

~~$\sin x = -3$~~

not possible

