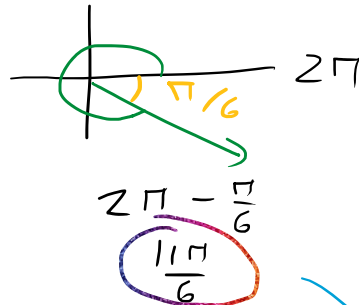
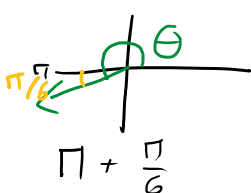


Warm-up!

A) Find all values of θ with $0 \leq \theta < 2\pi$ for which

$$\sin \theta = -\frac{1}{2}$$



B) Find all values of θ with $0 \leq \theta < 2\pi$ for which

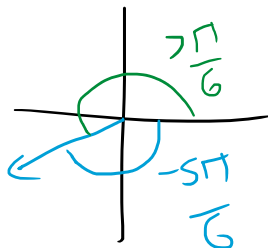
$$\sec \theta = \sqrt{2}$$

C) Find all values of θ with

for which

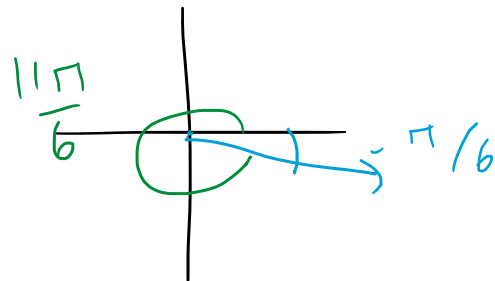
$$\frac{7\pi}{6} - \frac{12\pi}{6}$$

$$-\frac{5\pi}{6}$$



$$\frac{11\pi}{6} - \frac{12\pi}{6}$$

$$-\frac{\pi}{6}$$



Trig Functions, Day 5

- Quiz
- Solving Trig Equations
- Finding ALL solutions to trig equations

Homework: Finding ALL Solutions to Equations

Speed Quiz Next Class

- Any angle
- All six trig functions

More Solutions

$$\csc(\theta) = -2$$

Solve over the interval $0 \leq \theta < 2\pi$

Solve instead over the interval $-2\pi \leq \theta < 0$

Solve instead over the interval $2\pi \leq \theta < 4\pi$

Solve instead over the interval $-2\pi \leq \theta < 4\pi$

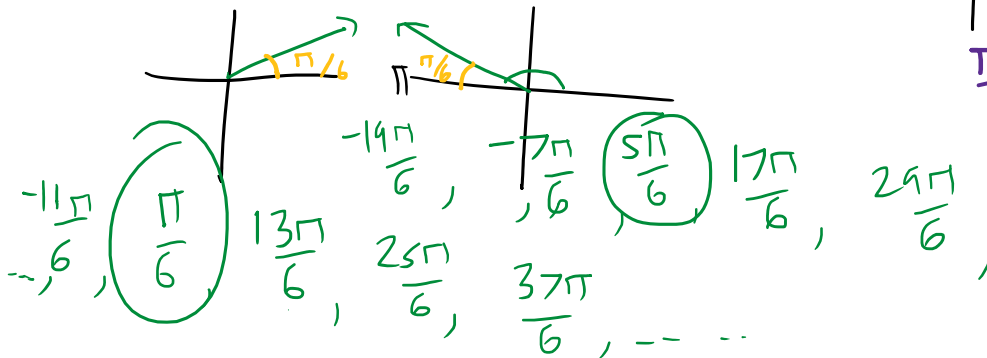
Solve over the interval $-\pi \leq \theta < \pi$

$$5 \csc \theta - 10 = 0$$

$$5 \csc \theta = 10$$

$$\csc \theta = 2$$

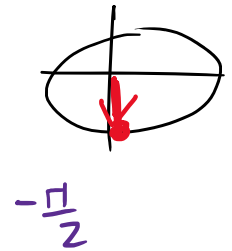
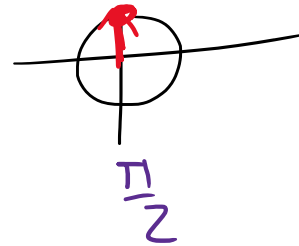
$$\sin \theta = \frac{1}{2}$$



$$8 \cot \theta - 3 = -3$$

$$8 \cot \theta = 0$$

$$\cot \theta = 0$$



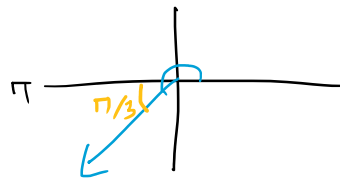
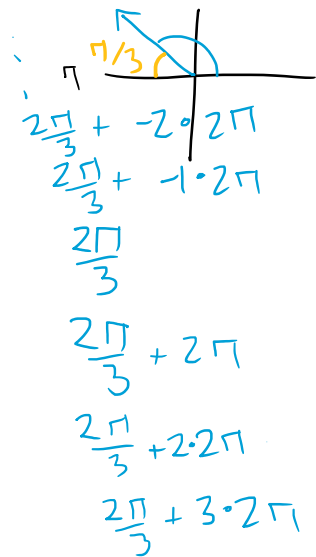
$\frac{x}{y}$

Solve over the interval $0 \leq \theta < 6\pi$

$$14 \sin(\theta) + 2 = 9$$

Find ALL Solutions

$$\theta = \frac{2\pi}{3} + 2\pi k, \text{ where } k \text{ is any integer}$$



$$\frac{4\pi}{3}$$

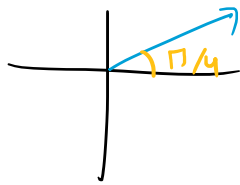
$$\theta = \frac{4\pi}{3} + 2\pi k, \quad k \in \mathbb{Z}$$

A different way to word this question: \

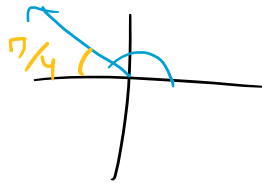
Let $f(\theta) = \cos \theta$. Find all input values in the domain of f that yield an output value of $-\frac{1}{2}$

Find ALL Solutions

$$\sin(\theta) = \frac{\sqrt{2}}{2}$$



$$\theta = \frac{\pi}{4} + 2\pi k$$



$$\theta = \frac{3\pi}{4} + 2\pi k,$$

where k
is any integer

A different way to word this question:

Let $m(\theta) = \sin \theta$. Find all input values in the domain of m that yield an output value of $\frac{\sqrt{2}}{2}$

$$-2 \tan \theta - 1 = 1$$

Solve over the interval $0 \leq \theta < 4\pi$

Write an expression that represents ALL solutions

A different way to word this question:

Let $g(\theta) = -2 \tan \theta - 1$. Find all input values in the domain of g that yield an output value of 1

First, solve over $0 \leq \theta < 2\pi$. Then, write an expression for ALL the solutions.

$$(2 \cos \theta - 1)(\sin \theta + 1) = 0$$

A different way to word this question:

Let $r(\theta) = (2 \cos \theta - 1)(\sin \theta + 1)$. Find all zeros of r in the interval $0 \leq \theta < 2\pi$. Then, find all zeros in the domain of r .

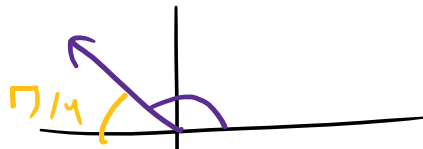
First, solve over $0 \leq \theta < 2\pi$. Then, write an expression for ALL the solutions.

$$(2 \sin \theta - 1)(\csc \theta + 2)(\tan \theta - 1) = 0$$

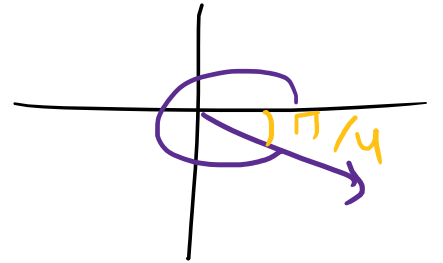
First, solve over $0 \leq \theta < 2\pi$. Then, write an expression for ALL the solutions.

$$(\sec \theta)^2 = 2$$

$$\tan \theta = -1$$



$$\theta = \frac{3\pi}{4} + 2\pi k$$



$$\theta = \frac{7\pi}{4} + 2\pi k$$

$$\theta = \frac{3\pi}{4} + \pi k$$