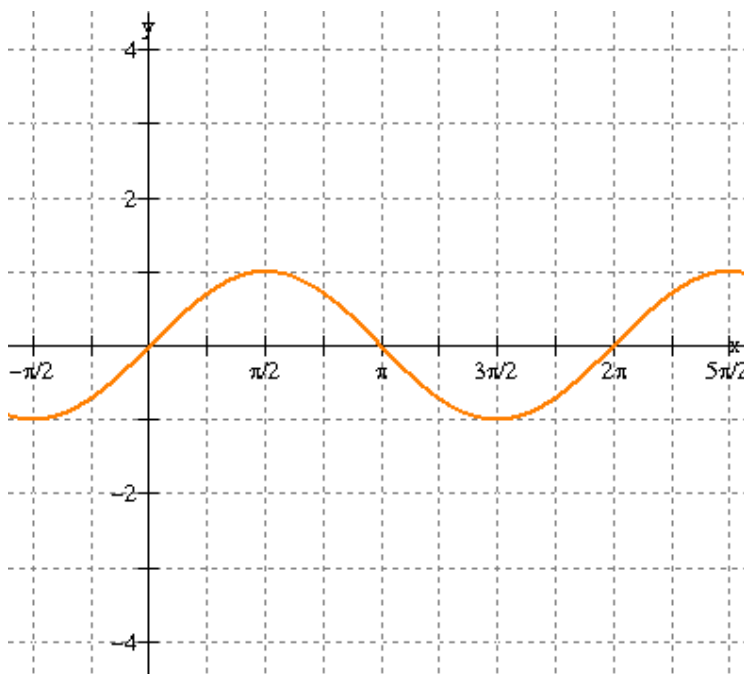


## Questions from Homework

## Graphs of Other Trig Functions

$$y = \sin \theta$$



What would the graph of  $\csc \theta$  look like?

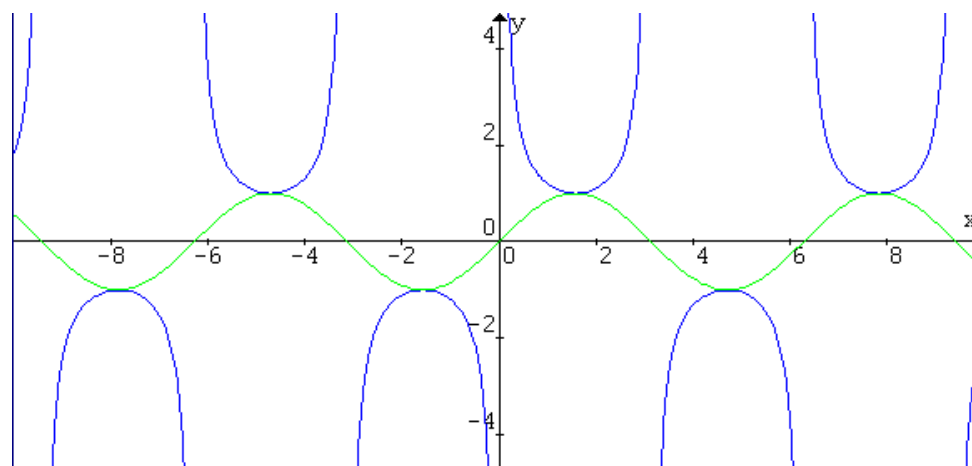
**REMEMBER:**

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

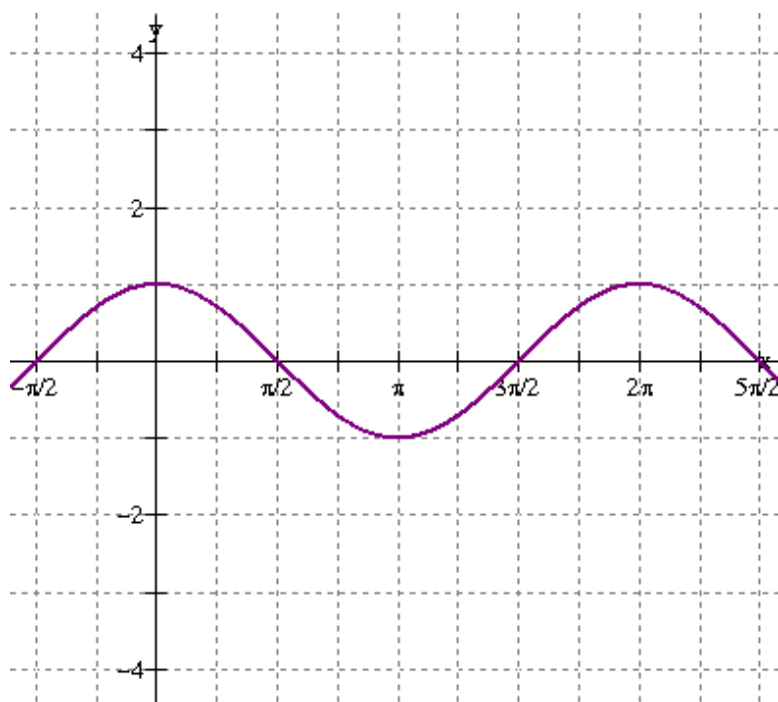
where  $\sin x = 0$ ,  
 $\csc x$  is undefined

$$y = \sin x$$

$$y = \csc x$$



$$y = \cos \theta$$



What would the graph of  $\sec \theta$  look like?

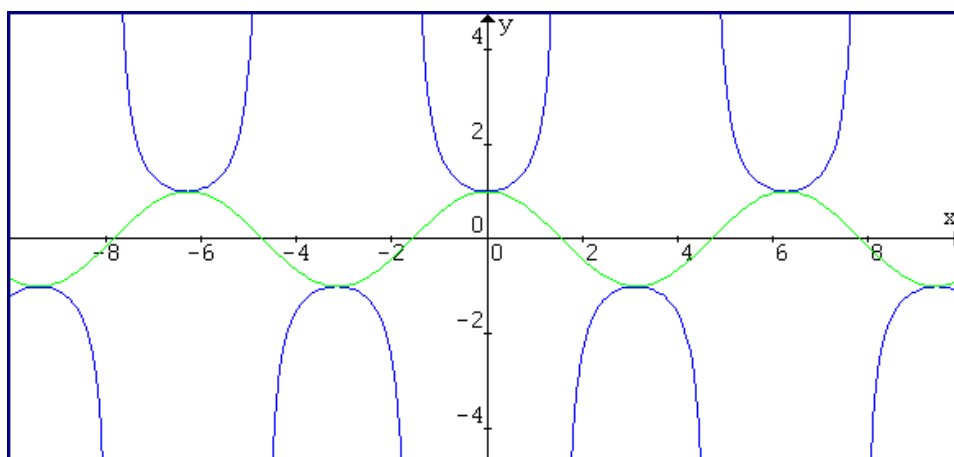
**REMEMBER:**

$$\sec \theta = \frac{1}{\cos \theta}$$

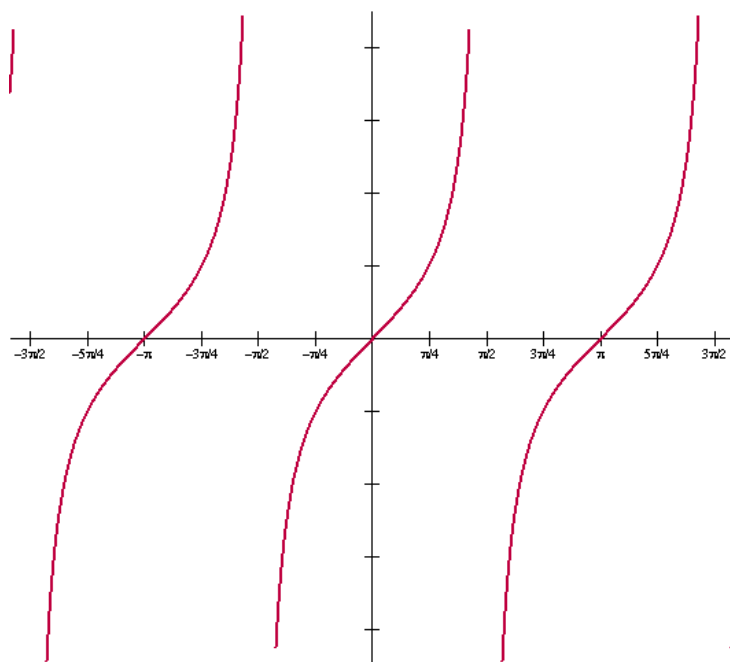
where  $\cos x = 0$ ,  
 $\sec x$  is undefined

$$y = \cos x$$

$$y = \sec x$$



$$y = \tan \theta$$



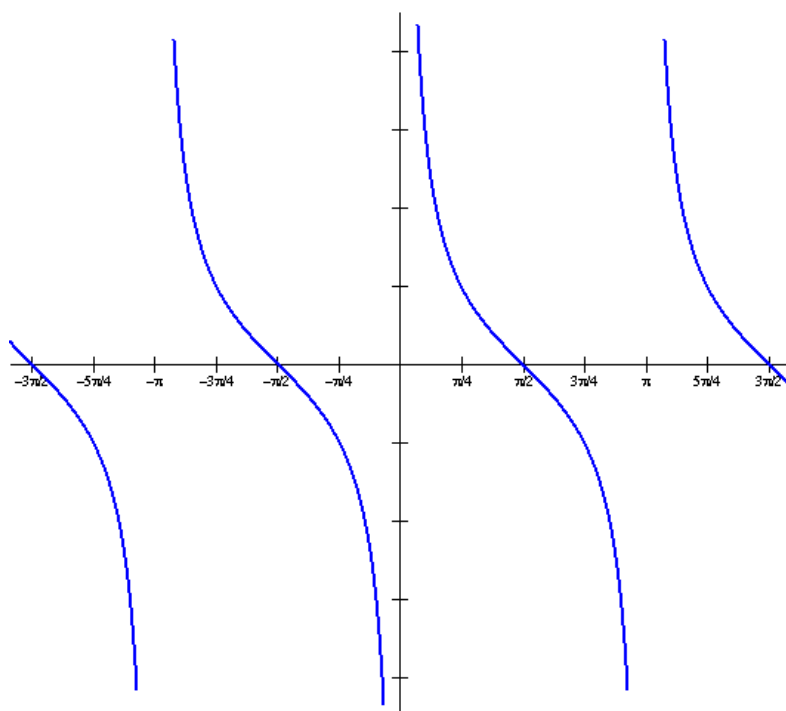
What would the graph of  $\cot \theta$  look like?

**REMEMBER:**

$$\tan x = \frac{1}{\cot x}$$

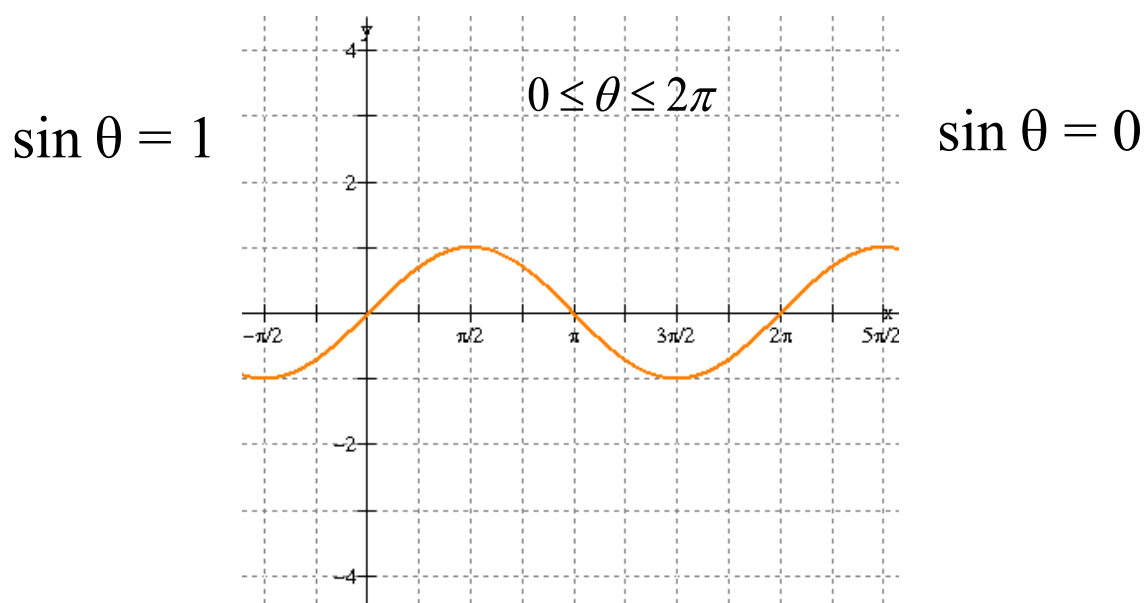
where  $\tan x = 0$ ,  
 $\cot x$  is undefined

$$y = \cot \theta$$



## Solving Trigonometric Equations Using a Graph

$$y = \sin \theta$$



## Warm-Up

$$2\cos x - \sqrt{3} = 0$$

$$2\cos x = \sqrt{3}$$

$$\cos x = \frac{\sqrt{3}}{2}$$

$$\theta_R = \frac{\pi}{6}$$

where is cosine positive

Q1	Q4
$\theta = \theta_R$	$\theta = 2\pi - \theta_R$
$\theta = \frac{\pi}{6}$	$\theta = 2\pi - \frac{\pi}{6}$
$\theta = \frac{\pi}{6} + 2\pi n, n \in \mathbb{N}$	$\theta = \frac{11\pi}{6}$
	$\theta = \frac{11\pi}{6} + 2\pi n, n \in \mathbb{N}$

Common  
factor

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

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

$$0 \leq \theta \leq 2\pi$$

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

$$\theta = 0, \pi, 2\pi$$

$$2\sin x = 1$$

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

$$\theta_R = \frac{\pi}{6}$$

Where is sine positive:

Q1	Q2
$\theta = \frac{\pi}{6}$	$\theta = \frac{5\pi}{6}$

## Solving Trigonometric Equations Using Identities

$$3\sin^2 x = \cos^2 x \quad 0 \leq x \leq 2\pi$$

$$\cancel{3} \tan^2 x = \frac{1}{\cancel{3}}$$

$$\tan^2 x = \frac{1}{3}$$

$$\tan x = \pm \frac{1}{\sqrt{3}}$$

$$\theta_R = \frac{\pi}{6}$$

Q1	Q2	Q3	Q4
$\theta = \frac{\pi}{6}$	$\theta = \pi - \theta_R$ $\theta = \frac{5\pi}{6}$	$\theta = \pi + \theta_R$ $\theta = \frac{7\pi}{6}$	$\theta = 2\pi - \theta_R$ $\theta = \frac{11\pi}{6}$

$$\underline{\cos^2 x} - \sin^2 x = \sin x \quad -2\pi \leq x \leq 2\pi$$

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

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

Trinomial Decomposition

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

$$\begin{aligned} 2x - 1 &= -2 \\ 2 + -1 &= 1 \end{aligned}$$

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

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

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

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

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

$$\theta_R = \frac{\pi}{6}$$

$$\sin x + 1 = 0$$

$$\sin x = -1$$

$$\theta = \frac{3\pi}{2}$$

$$\theta = -\frac{\pi}{2}$$

Q1

Q2

$$\theta = \frac{\pi}{6}$$

$$\theta = \frac{5\pi}{6}$$

$$\theta = -\frac{11\pi}{6}$$

$$\theta = -\frac{7\pi}{6}$$



# Homework

Finish worksheet and #11-13 on page 227