

Questions from Homework

① c) $\csc \theta = 0$ Not Possible
No Solution
 $\frac{\text{hyp}}{\text{opp}}$ or $\frac{1}{y}$ $-1 \leq \sin \theta \leq 1$

① e) $\csc \theta = \frac{1}{\theta}$ No Solution

⑤ b) $\sin \theta (\cos \theta - 1) = 0$

$$\begin{array}{l|l} \sin \theta = 0 & \cos \theta - 1 = 0 \\ \theta = 0^\circ, 180^\circ, 360^\circ & \cos \theta = 1 \\ & \theta = 0^\circ, 360^\circ \end{array}$$

Solving Trigonometric Equations

$$\cos^2 \theta - \frac{1}{2} \cos \theta = 0, \quad -360^\circ \leq \theta \leq 720^\circ$$

$$\cos \theta (\cos \theta - \frac{1}{2}) = 0$$

$$\cos \theta = 0 \quad \left| \begin{array}{l} \cos \theta - \frac{1}{2} = 0 \\ \cos \theta = \frac{1}{2} \end{array} \right.$$

$$\theta = 90^\circ, 270^\circ$$

$$\theta = -270^\circ, -90^\circ$$

$$\theta = 450^\circ, 630^\circ$$

Quad 1

$$\theta = 60^\circ$$

$$\theta = -300^\circ$$

$$\theta = 420^\circ$$

Quad 4

$$\theta = 300^\circ$$

$$\theta = -60^\circ$$

$$\theta = 660^\circ$$

$$\sin^2 \theta - \frac{\sqrt{3}}{2} \sin \theta = 0, \quad -360^\circ \leq \theta \leq 360^\circ$$

$$\sin \theta \left(\sin \theta - \frac{\sqrt{3}}{2} \right) = 0$$

$\sin \theta = 0$ $\theta = 0^\circ, 180^\circ, 360^\circ$ $\theta = -360^\circ, -180^\circ$	$\sin \theta - \frac{\sqrt{3}}{2} = 0$ $\sin \theta = \frac{\sqrt{3}}{2}$ ref = 60° <u>Quad 1</u> $\theta = 60^\circ$ $\theta = -300^\circ$	<u>Quad 2</u> $\theta = 120^\circ$ $\theta = -240^\circ$
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$$2\sin^2 \theta + \sin \theta - 1 = 0 \quad 0 \leq \theta \leq 360$$

$$\begin{array}{l} 2x-1=-2 \\ 2+1=1 \end{array}$$

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

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

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

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

$$2\sin \theta = 1$$

$$\sin \theta = \frac{1}{2} \text{ ref } 30^\circ$$

Quadrant I

$$\theta = 30^\circ$$

$$\sin \theta + 1 = 0$$

$$\sin \theta = -1$$

$$\theta = 270^\circ$$

Quadrant II

$$\theta = 150^\circ$$

$$2\cos^2 \theta - 7\cos \theta + 3 = 0, 0 \leq \theta \leq 360$$

$$\begin{array}{r} \underline{-6} \times \underline{-1} = 6 \\ -6 + \underline{-1} = -7 \end{array}$$

$$(2\cos^2 \theta - 1\cos \theta)(-6\cos \theta + 3) = 0$$

$$\cos \theta (2\cos \theta - 1) - 3(2\cos \theta - 1) = 0$$

$$(\cos \theta - 3)(2\cos \theta - 1) = 0$$

$$\cos \theta - 3 = 0$$

$$\cos \theta = 3$$

No Solution

$$2\cos \theta - 1 = 0$$

$$2\cos \theta = 1$$

$$\cos \theta = \frac{1}{2} \quad \text{ref} = 60^\circ$$

Quad 1

$$\theta = 60^\circ$$

Quad 4

$$\theta = 300^\circ$$

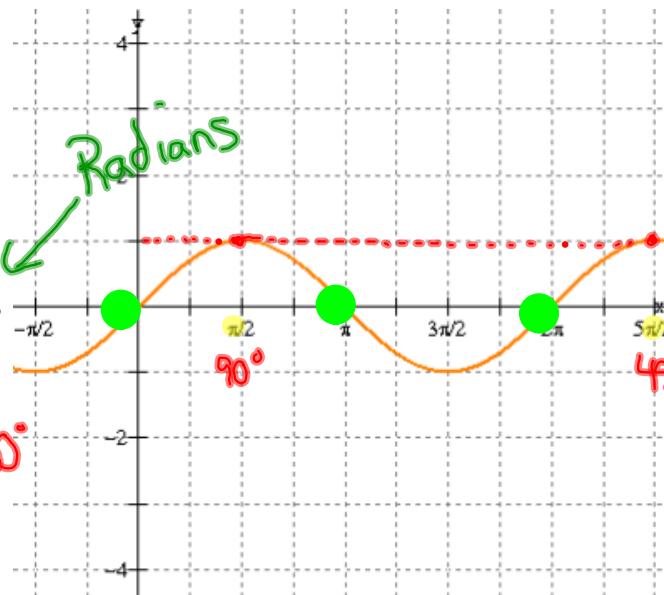
Solving Trigonometric Equations Using a Graph

$$y = \sin \theta$$

Where is
 $\sin \theta = 1$

$$\theta = \frac{\pi}{2}, \frac{5\pi}{2}$$

$$\theta = 90^\circ, 450^\circ$$



Where is
 $\sin \theta = 0$

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

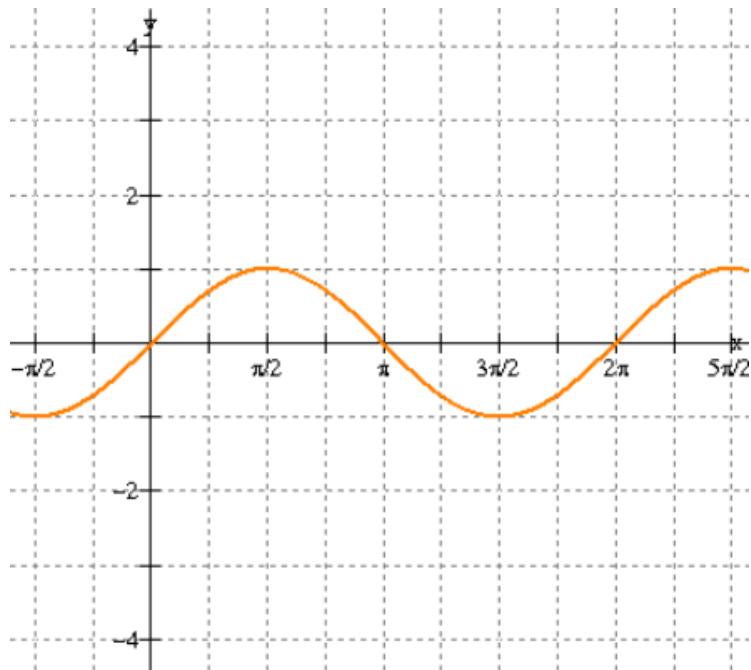
$$450^\circ \quad \theta = 0^\circ, 180^\circ, 360^\circ$$

Exercise 7.7

Finish #6-8

Graphs of Other Trig Functions

$$y = \sin \theta$$



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

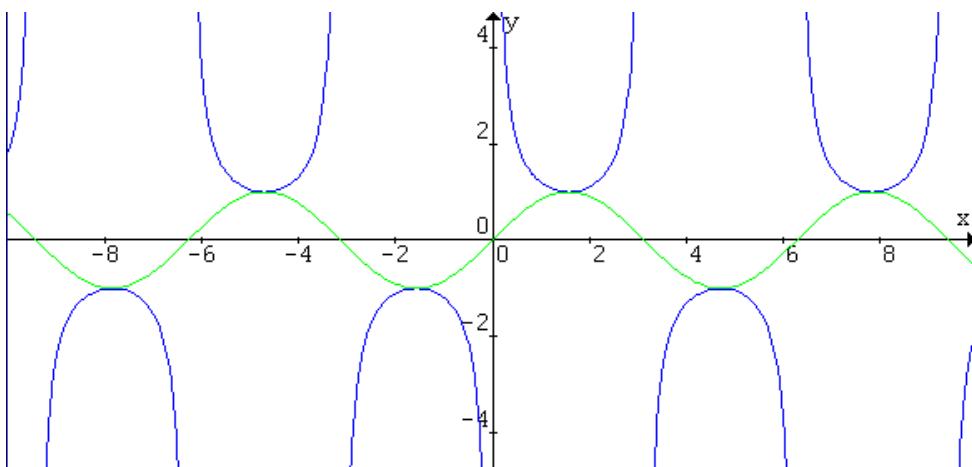
REMEMBER:

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

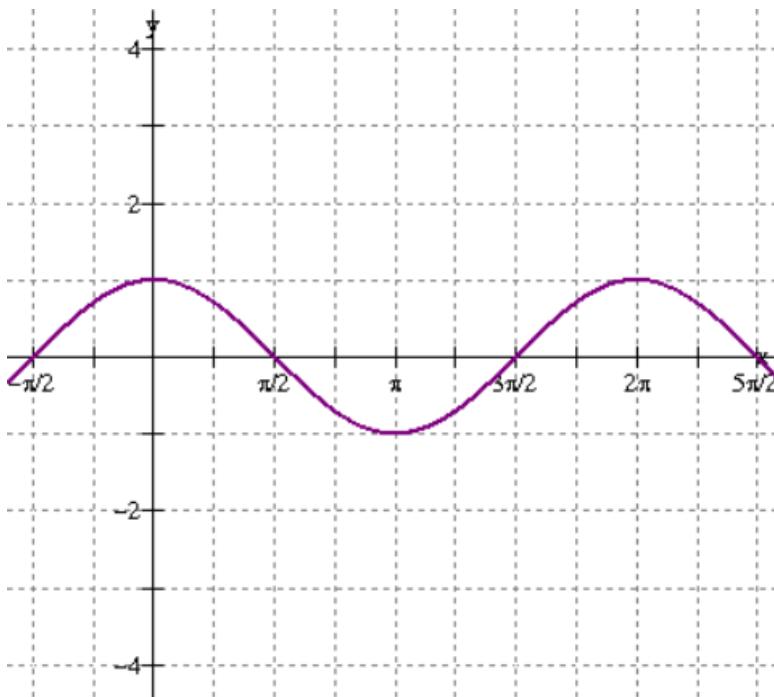
where $\sin x = 0$,
 $\csc x$ is undefined

$$y = \sin x$$

$$y = \csc x$$



$$y = \cos \theta$$



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

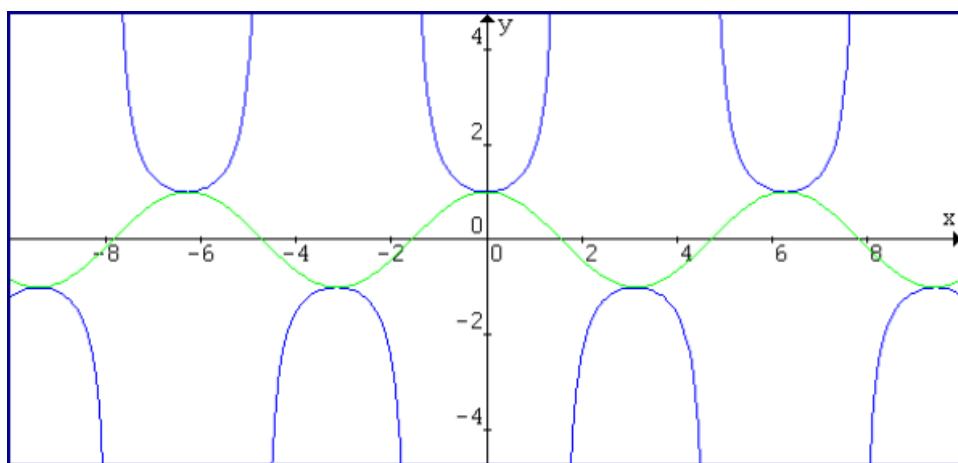
REMEMBER:

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

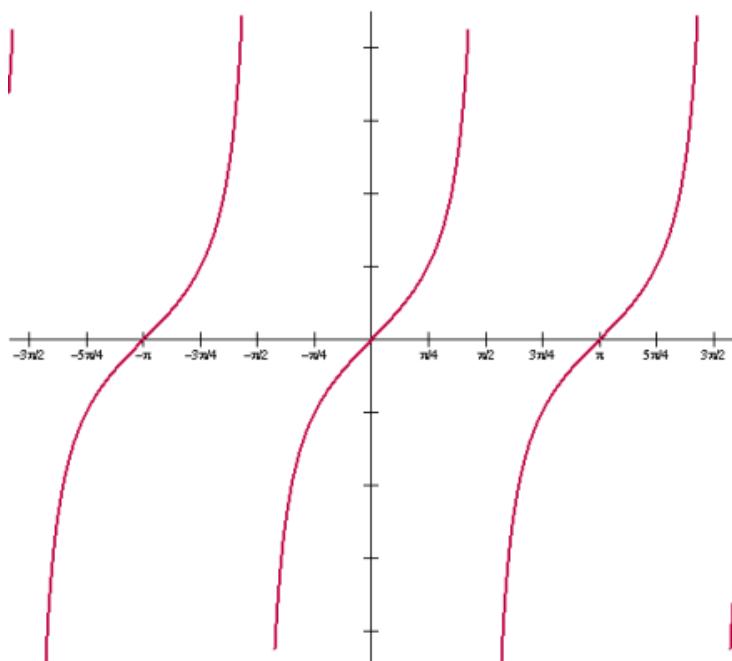
where $\cos x = 0$,
 $\sec x$ is undefined

$$y = \cos x$$

$$y = \sec x$$



$$y = \tan \theta$$



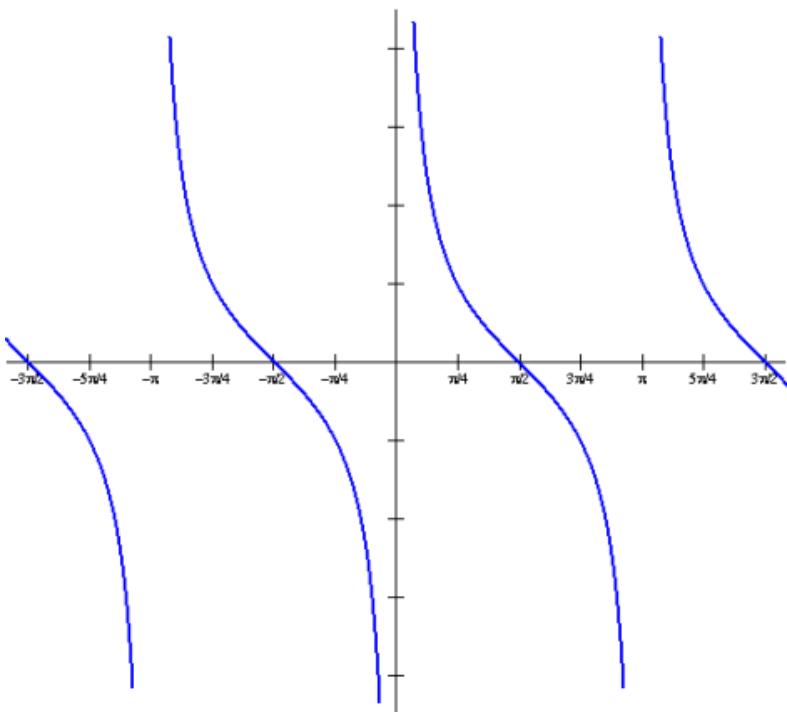
What would the graph of $\cot \theta$ look like?

REMEMBER:

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

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

$$y = \cot \theta$$



Homework