Questions from Homework

① c) $\csc\theta = 0$ Not Possible No Solution

$\csc\theta$ ↙ $\frac{hyp}{opp}$ or $\frac{1}{y}$

$-1 \leq \sin\theta \leq 1$

① e) $\csc\theta = \frac{1}{2}$ No Solution

⑤ b) $\sin\theta(\cos\theta - 1) = 0$

$\sin\theta = 0$

$\theta = 0°, 180°, 360°$

$\cos\theta - 1 = 0$

$\cos\theta = 1$

$\theta = 0°, 360°$

Solving Trigonometric Equations

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

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

$\cos\theta = 0$

$\theta = 90°, 270°$

$\theta = -270°, -90°$

$\theta = 450°, 630°$

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

$\cos\theta = \frac{1}{2}$ $\quad \theta_R = 60°$

Quad 1

$\theta = 60°$

$\theta = -300°$

$\theta = 420°$

Quad 4

$\theta = 300°$

$\theta = -60°$

$\theta = 660°$

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

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

$\sin\theta = 0$

$\theta = 0°, 180°, 360°$

$\theta = -360°, -180°$

$\sin\theta - \frac{\sqrt{3}}{2} = 0$

$\sin\theta = \frac{\sqrt{3}}{2}$ $\theta_R = 60°$

Quad 1

$\theta = 60°$

$\theta = -300°$

Quad 2

$\theta = 120°$

$\theta = -240°$

$2\sin^2\theta + \sin\theta - 1 = 0 \qquad 0 \le \theta \le 360$

$2 \times -1 = -2$

$2 + -1 = 1$

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

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

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

$2\sin\theta - 1 = 0$

$2\sin\theta = 1$

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

$\theta_R = 30$

Quad 1: $\theta = 30°$

Quad 2: $\theta = 150°$

$\sin\theta + 1 = 0$

$\sin\theta = -1$

$\theta = 270°$

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

$-6 \times -1 = 6$

$-6 + -1 = -7$

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

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

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

$\cos\theta - 3 = 0$

$\cos\theta = 3$

No Solution

$2\cos\theta - 1 = 0$

$2\cos\theta = 1$

$\cos\theta = \frac{1}{2}$ $\theta_R = 60$

Quad 1 Quad 4

$\theta = 60°$ $\theta = 300°$

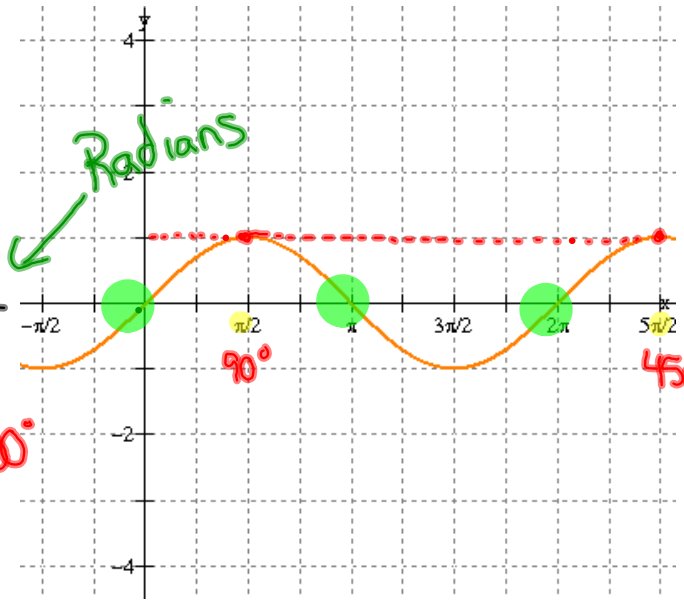
Solving Trigonometric Equations Using a Graph

$y = \sin\theta$

Where is $\sin\theta = 1$

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

$\theta = 90°, 450°$



Where is $\sin\theta = 0$

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

$\theta = 0°, 180°, 360°$

Exercise 7.7

Finish #6-8

+ Review Sheet (Omit 7 b,d)

Ex: 7.7

e) $2\sin^2\theta + 5\sin\theta - 3 = 0$ $\quad -360° \le \theta \le 360°$

$(2\sin^2\theta - 1\sin\theta) + (6\sin\theta - 3) = 0$ $\quad -1 \times 6 = -6$, $-1 + 6 = 5$

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

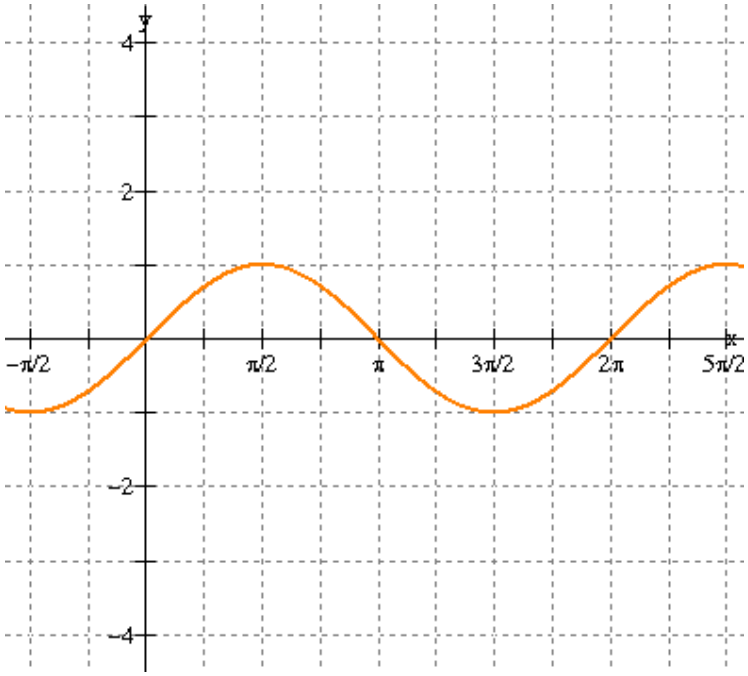
$(\sin\theta + 3)(2\sin\theta - 1) = 0$

$\sin\theta + 3 = 0$	$2\sin\theta - 1 = 0$
$\sin\theta = -3$	$\sin\theta = \frac{1}{2}$
Not Possible	ref = 30°

Q1	Q2
θ = ref	$\theta = 180 - ref$
$\theta = 30°$	$\theta = 150°$
$\theta = -330°$	$\theta = -210°$

Graphs of Other Trig Functions

y = sin θ



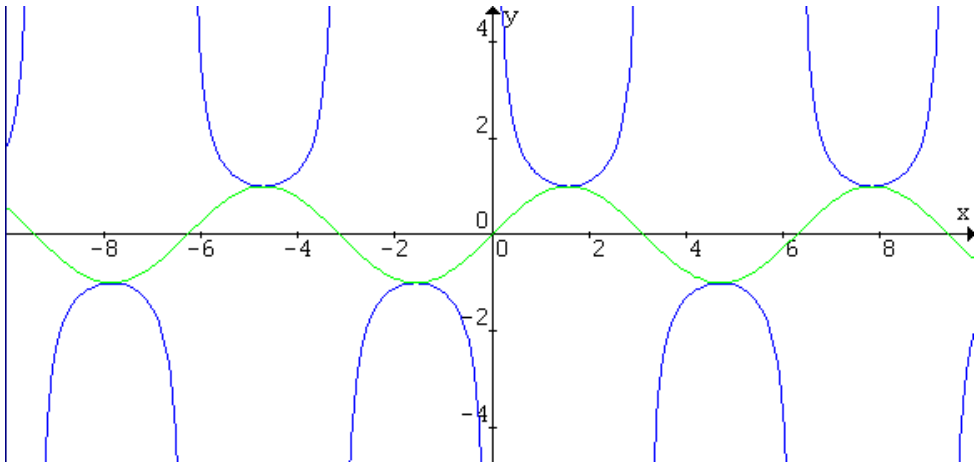
What would the graph of **csc θ** look like?

REMEMBER:

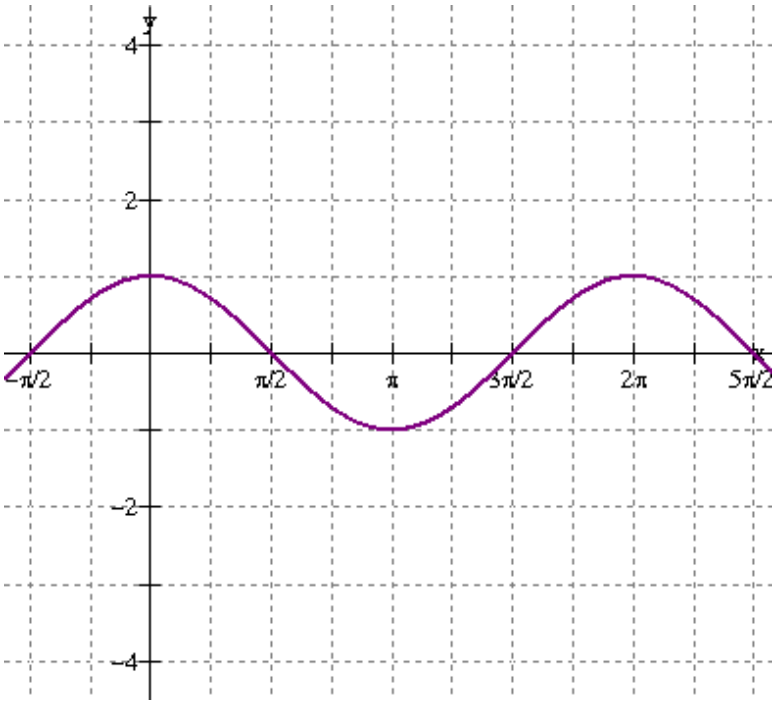
$$\csc\theta = \frac{1}{\sin\theta}$$

where sin x = 0,
csc x is undefined

y = sin x y = csc x



$y = \cos \theta$



What would the graph of **sec θ** look like?

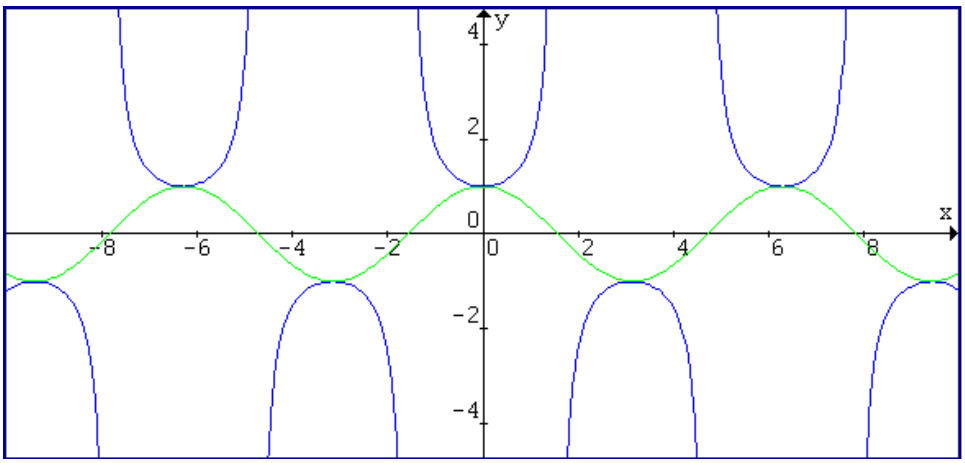
REMEMBER:

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

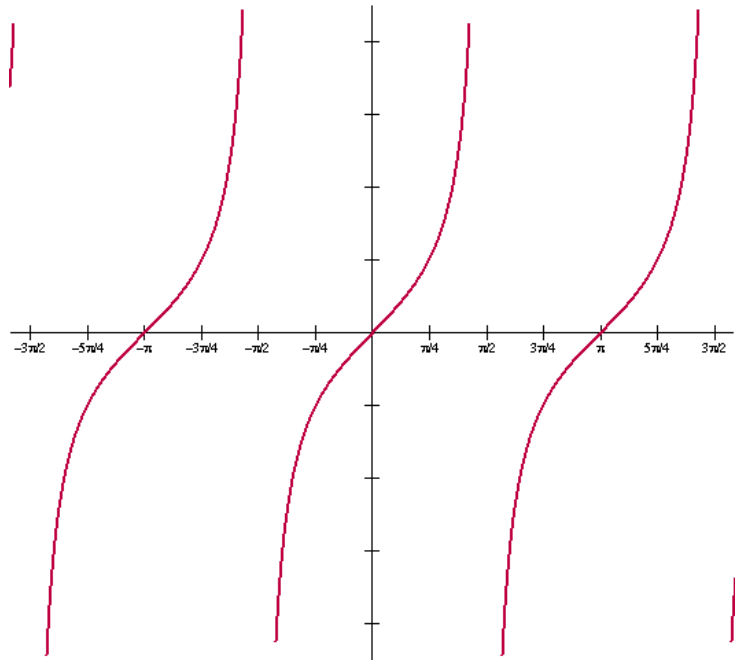
where cos x = 0,
sec x is undefined

y = cos x

y = sec x



y = tan θ



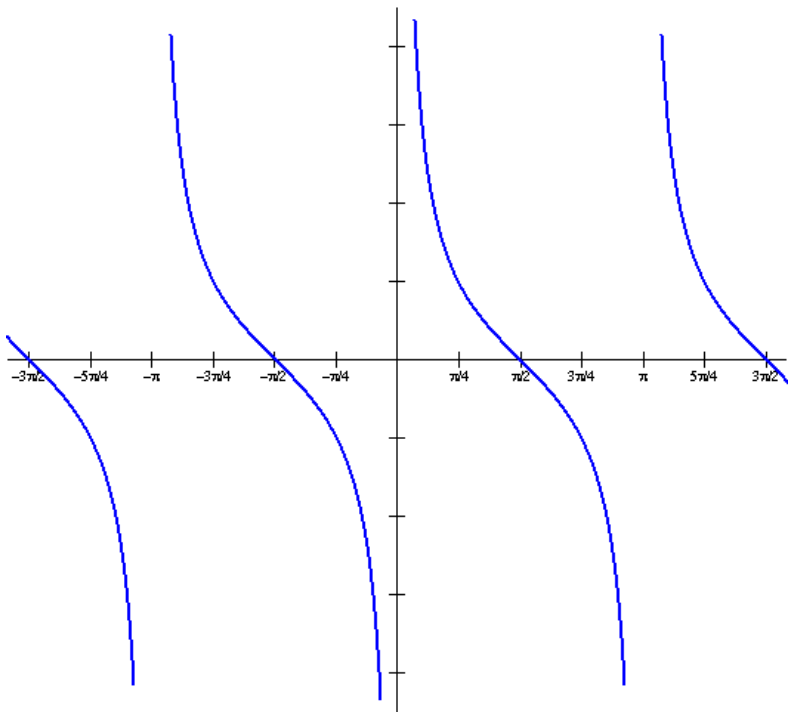
What would the graph of **cot θ** look like?

REMEMBER:

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

where tan x = 0,
cot x is undefined

y = cot θ



Homework