Questions from Homework

① c) No Solution

e) No Solution

⑤ a) $(\sin\theta)(\cos\theta)=0$

$\sin\theta=0$ | $\cos\theta=0$

$\theta=0,180^\circ,360^\circ$ | $\theta=90^\circ,270^\circ$

c) $(\sin\theta)(\sqrt{3}-2\cos\theta)=0$

$\sin\theta=0$

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

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

$-2\cos\theta=-\sqrt{3}$

$\cos\theta=\frac{\sqrt{3}}{2}$ ref $=30^\circ$

$\theta=30^\circ,330^\circ$

Q1 Q4

cosθ is positive in these quadrants

Solving Trigonometric Equations

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

restriction

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

$\cos\theta = 0$

$\theta = 90°, 270°$

(+) $450°, 630°$

(−) $-270°, -90°$

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

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

$\theta = 60°, 300°$

(+) $420°, 660°$

(−) $-300, -60°$

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

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

$\sin\theta = 0$

$\theta = 0, 180°, 360°$

(-) $-360°, -180°$

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

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

$\theta = 60°, 120°$

(-) $-300°, -240°$

Decomposition

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

$2 \times -1 = -2$

$2 + -1 = 1$

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

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

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

$2\sin\theta - 1 = 0$

$2\sin\theta = 1$

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

$\theta = 30°, 150°$

$\sin\theta + 1 = 0$

$\sin\theta = -1$

$\theta = 270°$

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

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

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

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

$2\cos\theta - 1 = 0$

$2\cos\theta = 1$

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

$\theta = 60°, 300°$

$\cos\theta - 3 = 0$

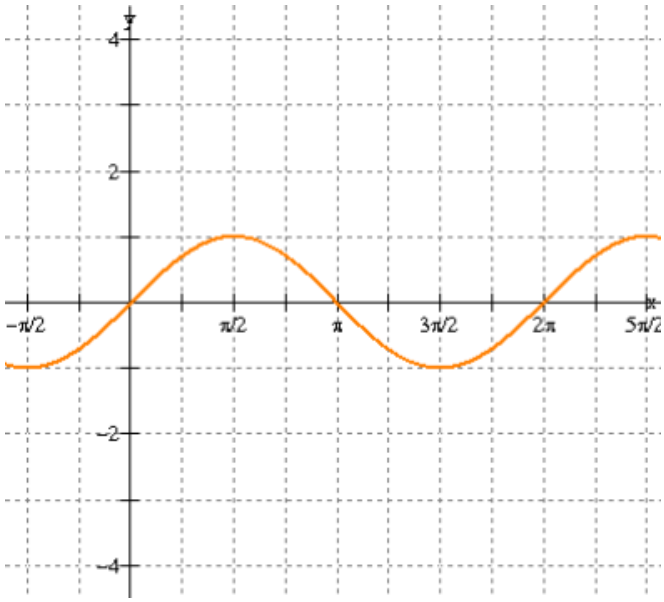
$\cos\theta = 3$

Not Possible

Solving Trigonometric Equations Using a Graph

y = sin θ

Where is
sin θ = 1



Where is
sin θ = 0

Exercise 7.7

Finish #6-8

Omit 7b)

What if?

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

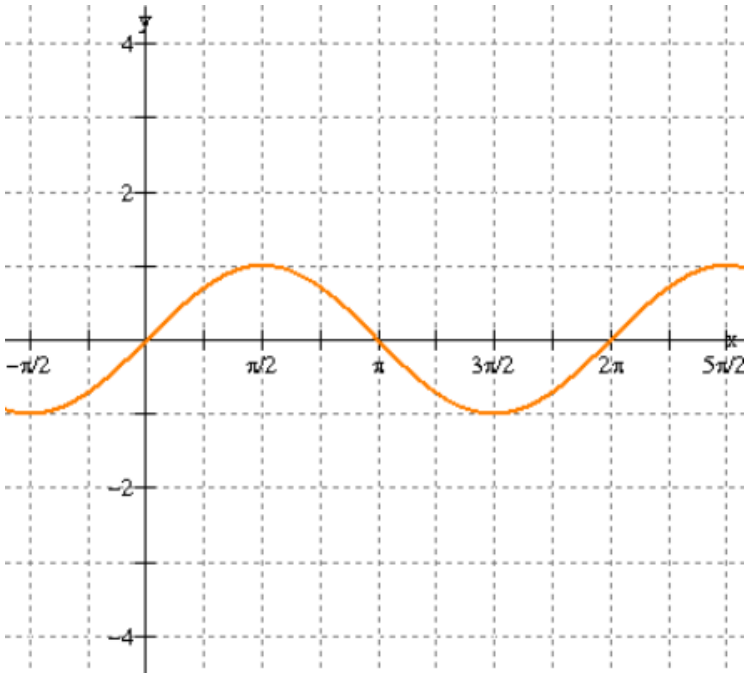
$\theta = 240°, 300°$

where is sinθ negative

Q3 Q4

Graphs of Other Trig Functions

y = sin θ



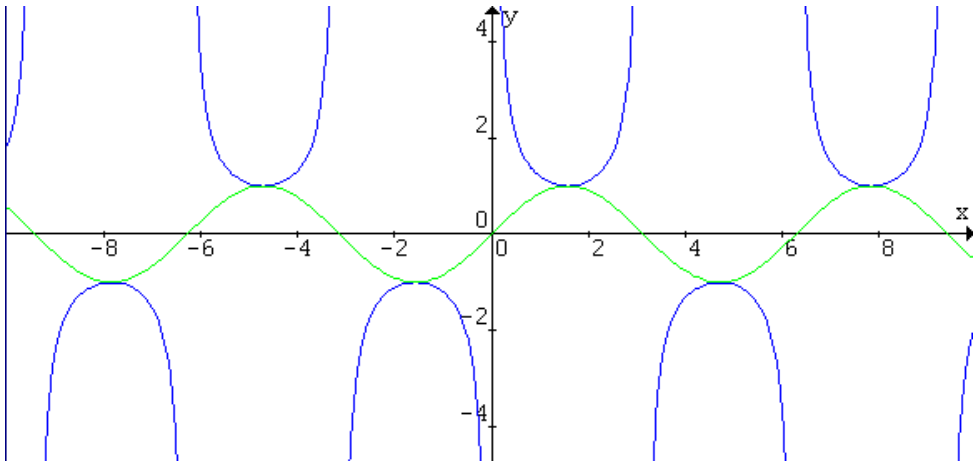
What would the graph of **csc θ** look like?

REMEMBER:

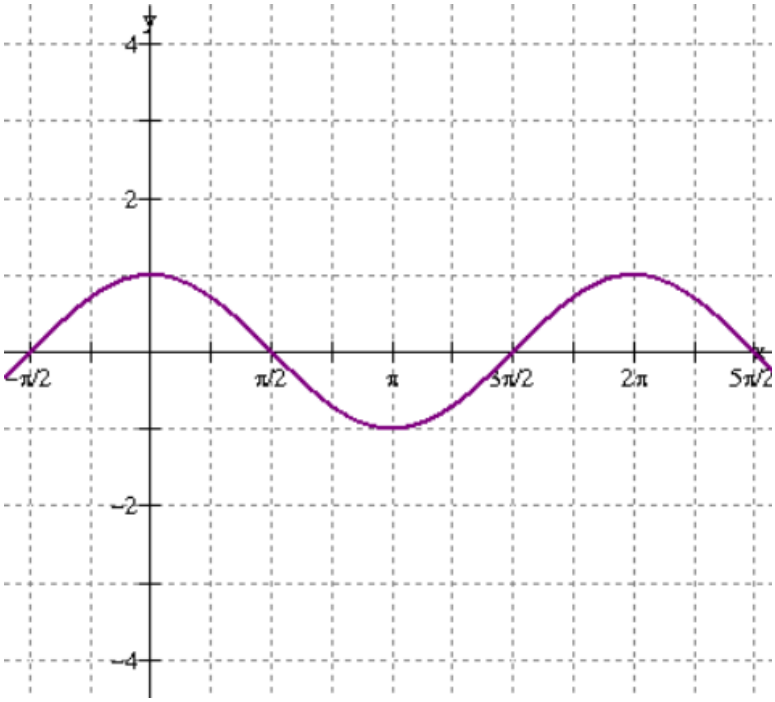
$$\csc\theta = \frac{1}{\sin\theta}$$

where sin x = 0,
csc x is undefined

y = sin x y = csc x



y = cos θ



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

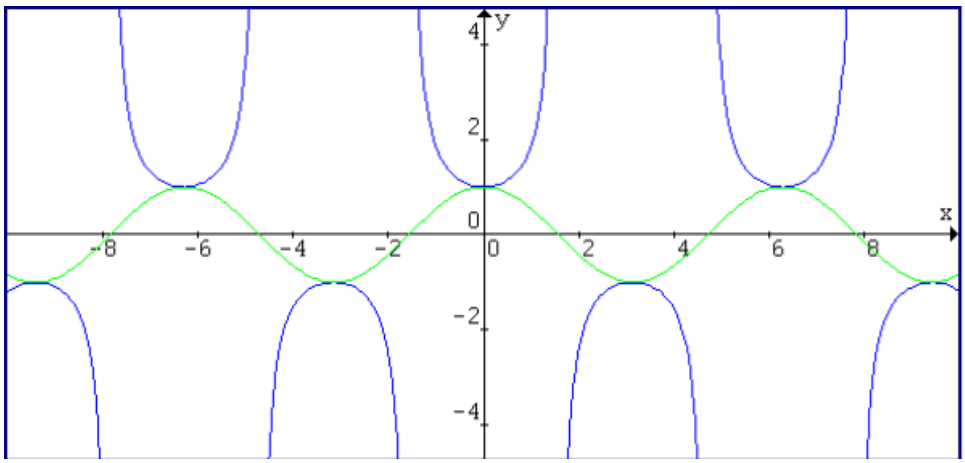
REMEMBER:

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

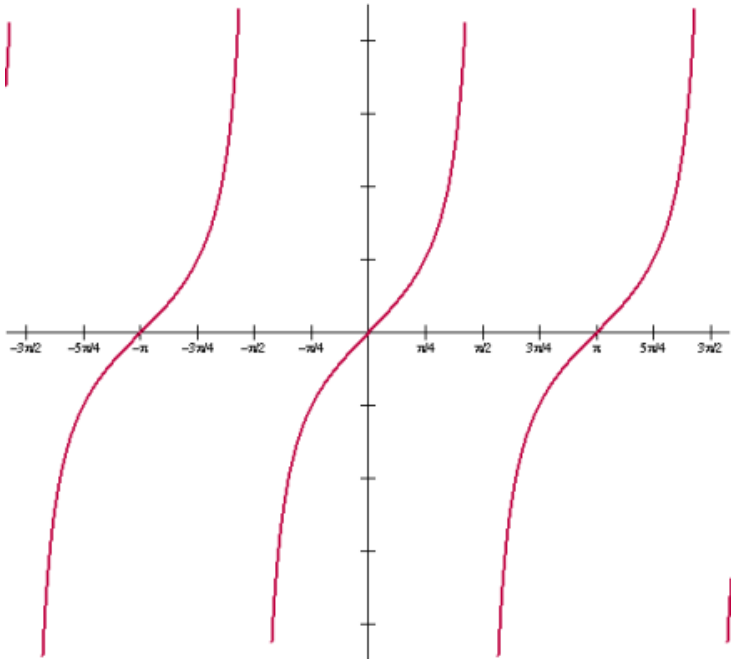
where cos x = 0,
sec x is undefined

y = cos x

y = sec x



y = tan θ



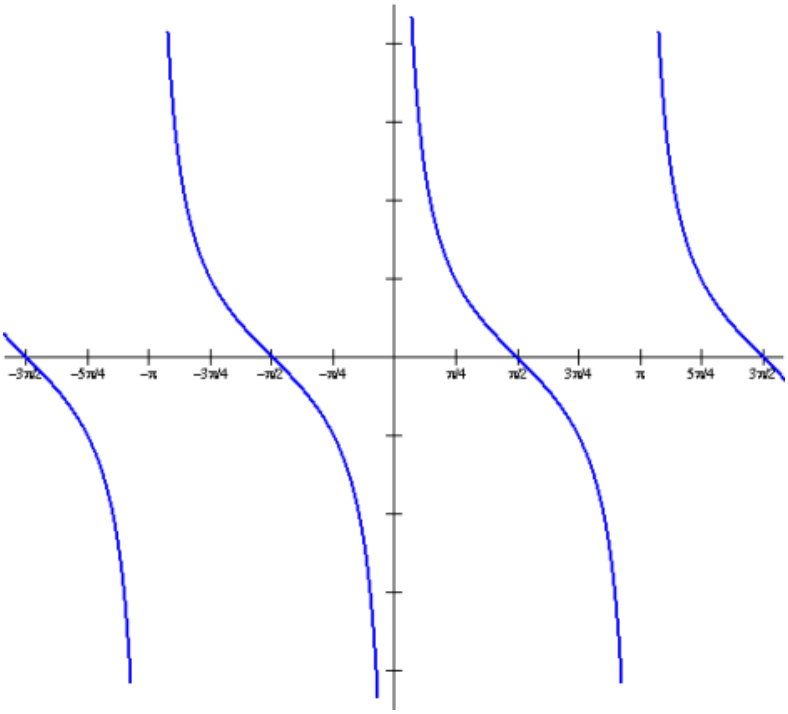
What would the graph of **cot θ** look like?

REMEMBER:

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

where tan x = 0,
cot x is undefined

y = cot θ



Homework