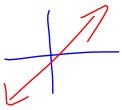
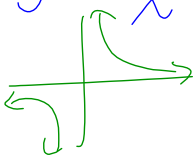
Section 4.6 part 1	Graph of *Sec x* and *Csc x*
Objective:	Given an equation of a cosecant x and secant x function students will be able to graph them and find the domain and range.

$y = x$



$y = \frac{1}{x}$ Reciprocal



Study Problems

Page 341 #17-19, 27, 30 Due thursday

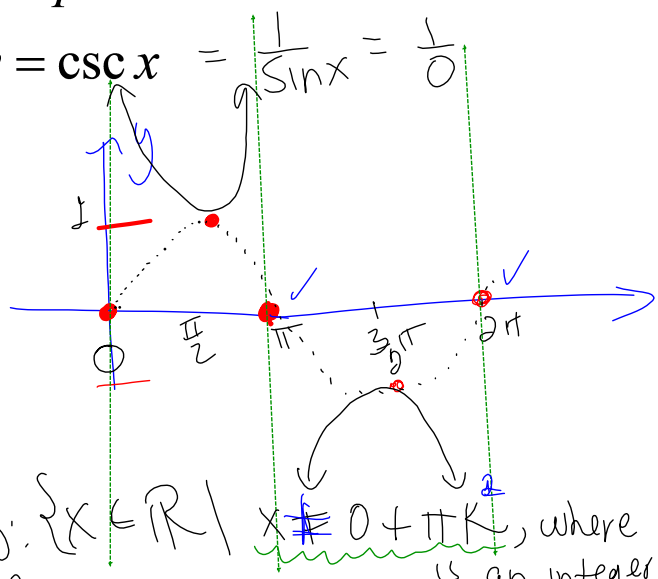
- Quiz thursday
- Assessment Tuesday

$y = \sin x$ reciprocal $y = \frac{1}{\sin x} = \csc x$

$y = \cos x$ reciprocal $y = \frac{1}{\cos x} = \sec x$

Graph

$y = \csc x = \frac{1}{\sin x} = \frac{1}{0}$



D: $\{x \in \mathbb{R} \mid x \neq 0 + \pi k$, where k is an integer$\}$

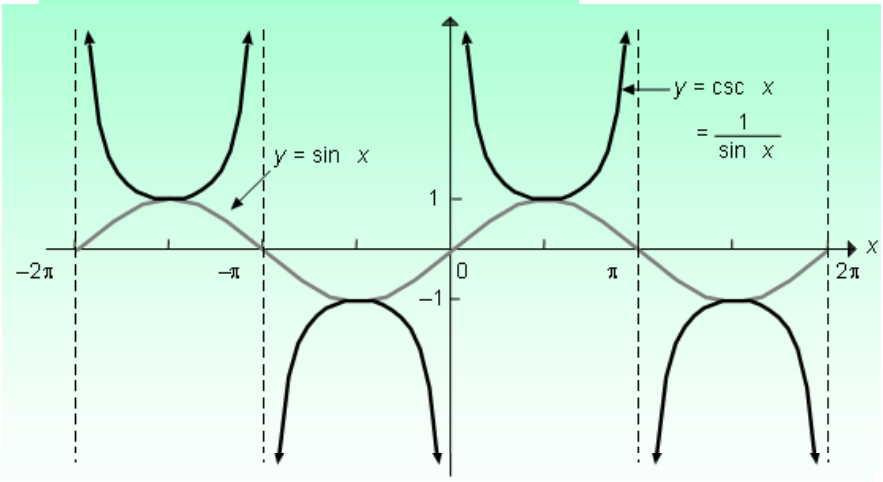
R: $\{y \in \mathbb{R} \mid y > 1$ or $y < -1\}$

Vertical Asy $x = 0 + \pi k$ where k is an integer.

Steps:

1. Graph the reciprocal func $y = \sin x$
2. Vertical Asy. at zeros for sine (Midline)
3. Graph Parabolas between Vert. Asy., Max Parabola opens up Min Parabola opens down

Graph of $y = \csc x$



Period: 2π

Domain: All real numbers except $k\pi$, k an integer

Range: All real numbers y such that $y \le -1$ or $y \ge 1$

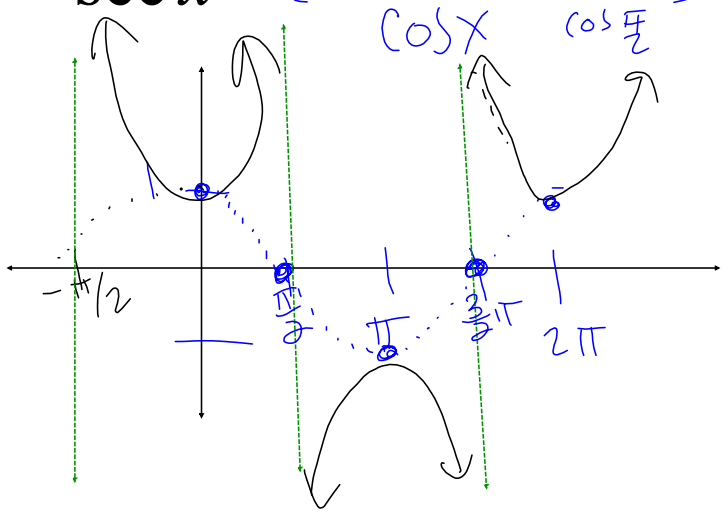
Symmetric with respect to the origin

Discontinuous at $x = k\pi$, k an integer

5-8-60

Graph

$$y = \sec x = \frac{1}{\cos x} = \frac{1}{\cos \frac{\pi}{2}} = \frac{1}{0}$$

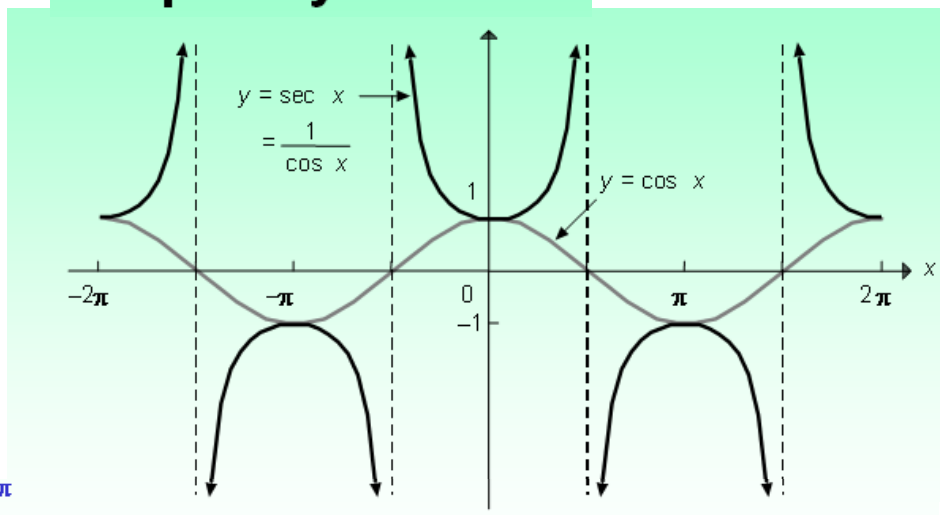


① Graph the reciprocal $y = \cos x$

② Vertical Asy. Points on Midline

③ Parabolas

Graph of $y = \sec x$



Period: 2π

Domain: All real numbers except $\pi/2 + k\pi$, k an integer

Symmetric with respect to the y axis

Discontinuous at $x = \pi/2 + k\pi$, k an integer

Range: All real numbers y such that $y \leq -1$ or $y \geq 1$