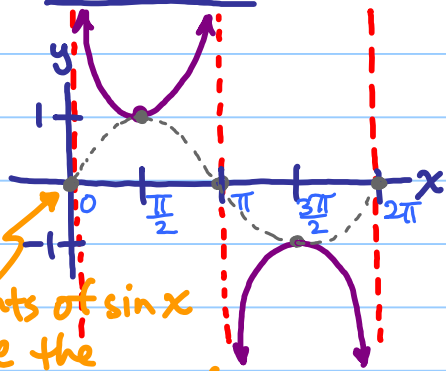


10/5  
FRI

# 4.6 (part 1) Cosecant & Secant Curves

**CSC x**



\* x-ints of  $\sin x$  are the asymptotes of  $\csc x$

$\frac{1}{\sin}$

$\frac{1}{\cos}$

$x \neq \pi n$

period:  $2\pi$

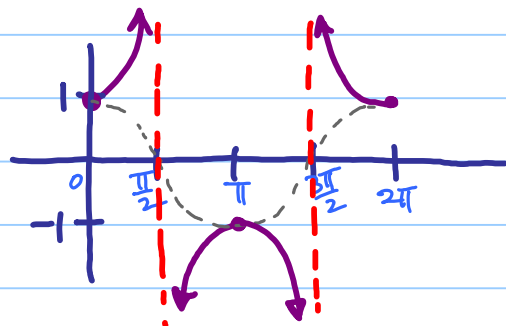
domain:  $\mathbb{R}$  except  $x = \pi n$  integers

range:  $y \geq 1$  or  $y \leq -1$   
aka  $(-\infty, -1] \cup [1, \infty)$

vert. asymptotes:  $x = \pi n$

odd function:  $\csc(-x) = -\csc x$   
→ origin symmetry

**sec x**



period:  $2\pi$

domain:  $\mathbb{R}$ , except  $x = \frac{\pi}{2} + \pi n$  integers

range:  $y \geq 1$  or  $y \leq -1$   
aka  $(-\infty, -1] \cup [1, \infty)$

vert. asymptotes:  $x = \frac{\pi}{2} + \pi n$

even function:  $\sec(-x) = \sec(x)$   
→ horiz reflection  
→ y-axis symmetry

HW p547  
30-44 even, 47, 48  
Show 2 periods  
0 → 4π

Amplitude:  $|A|$   
Period:  $\frac{2\pi}{B}$   
Phase Shift:  $\frac{C}{B}$   
Vert Shift:  $D$



$$y = A \csc(Bx - C) + D$$

$$y = A \sec(Bx - C) + D$$