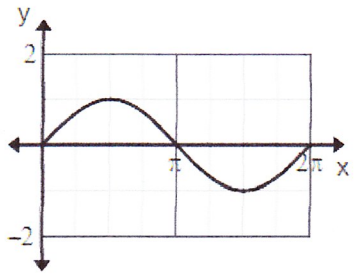
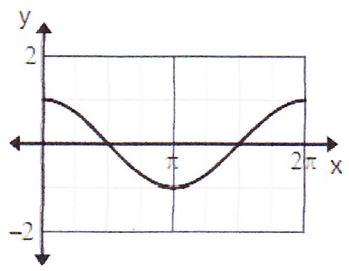
Pre-Calculus Notes

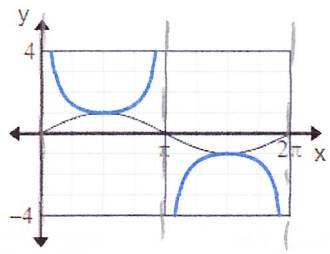
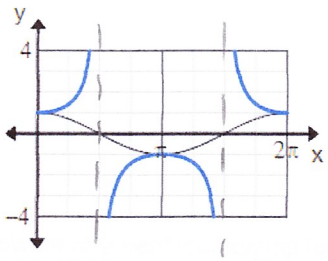
Name: key

Cosecant and Secant

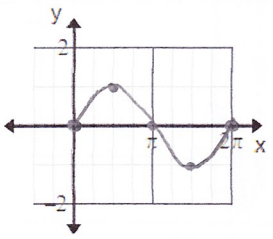
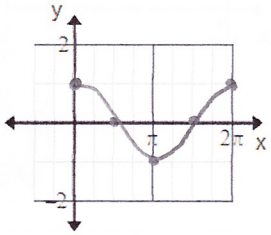
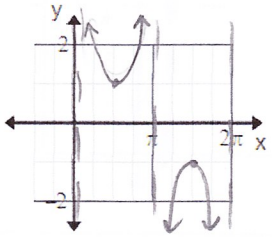
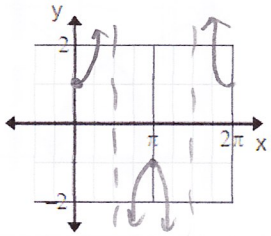
Period: _____

$y = \sin x$	$y = \cos x$
0-MAX-0-MIN-0	**MAX-0-MIN-0-MAX**
	

Well, $\csc x = \dfrac{1}{\sin x}$ and $\sec x = \dfrac{1}{\cos x}$, so to graph these functions, keep the x-values the same, but take the reciprocal of the y-values!

$y = \csc x$	$y = \sec x$
	
The cosecant function has asymptotes everywhere sine had zeroes... so at multiples of π.	The secant function has asymptotes everywhere cosine had zeroes... so at odd mult. of $\frac{\pi}{2}$.
It's domain is all reals, except for multiples of π.	It's domain is all reals, except for odd mult. of $\frac{\pi}{2}$.
It's range is $(-\infty, -1] \cup [1, \infty)$.	It's range is $(-\infty, -1] \cup [1, \infty)$.

The best way to graph the cosecant and secant to first graph the changes on the sine or cosine graph, then at the last moment take the reciprocal!

$y = \sin x$	$y = \cos x$	$y = \csc x$	$y = \sec x$
			
Odd or Even? odd	Odd or Even? even	Odd or Even? odd	Odd or Even? even
Domain: $\mathbb{R}$	Domain: $\mathbb{R}$	Domain: $\mathbb{R}$ except mult π	Domain: $\mathbb{R}$ except odd mult $\frac{\pi}{2}$
Range: $[-1, 1]$	Range: $[-1, 1]$	Range: $(-\infty, -1] \cup [1, \infty)$	Range: $(-\infty, -1] \cup [1, \infty)$
Period: 2π	Period: 2π	Period: 2π	Period: 2π
Zeros: mult of π	Zeros: odd mult $\frac{\pi}{2}$	Zeros: none	Zeros: none
Asymptotes: none	Asymptotes: none	Asymptotes: @ mult π	Asymptotes: @ odd mult $\frac{\pi}{2}$