Pre-Calculus Notes

Cosecant and Secant

\[ y = \sin x \quad \text{O-MAX-O-MIN-O} \]

\[ y = \cos x \quad \text{MAX-O-MIN-O-MAX} \]

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

\( y = \csc x \)

The cosecant function has asymptotes everywhere sine had zeroes... so at \( \text{multiples of } \pi \).

It's domain is all reals, except for \( \text{multiples of } \pi \).

It's range is \( (-\infty, -1] \cup [1, \infty) \).

\( y = \sec x \)

The secant function has asymptotes everywhere cosine had zeroes... so at \( \text{odd mult. of } \frac{\pi}{2} \).

It's domain is all reals, except for \( \text{odd mult. of } \frac{\pi}{2} \).

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!