

Lesson 6.1B – Graphs of Cosecant and Secant

**I. Warm-Up**

1. Evaluate the following:

a.  $\csc\left(\frac{3\pi}{4}\right) =$   
 $\csc\left(\pi - \frac{\pi}{4}\right)$   
 $+ \csc\frac{\pi}{4}$   
 $\frac{1}{\sin\left(\frac{\pi}{4}\right)} = \frac{1}{\frac{\sqrt{2}}{2}} = \sqrt{2}$

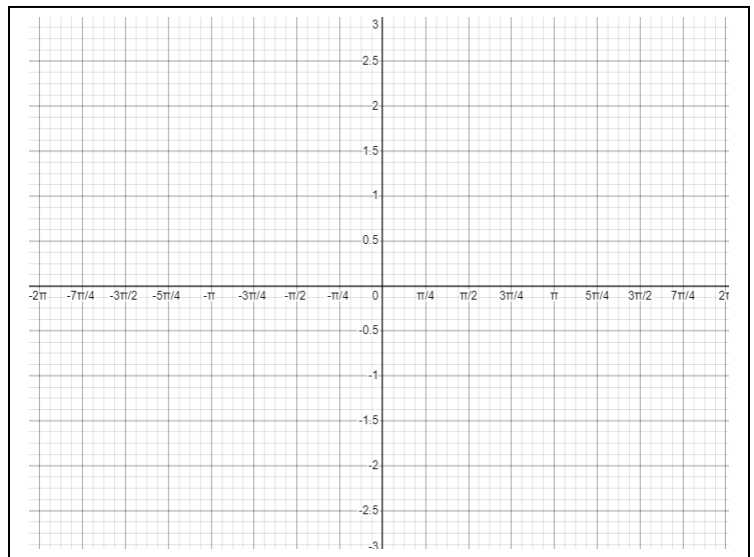
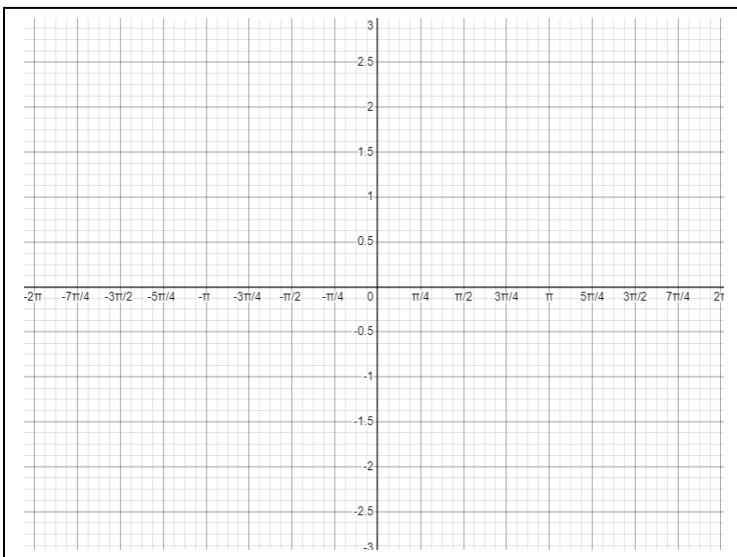
b.  $\sec\left(\frac{7\pi}{4}\right) =$   
 $\sec\left(\pi + \frac{\pi}{6}\right)$   
 $- \sec\left(\frac{\pi}{6}\right)$   
 $-\frac{1}{\cos\frac{\pi}{6}} = -\frac{1}{\frac{\sqrt{3}}{2}} = -\frac{2}{\sqrt{3}}$

c.  $\cot\left(\frac{5\pi}{3}\right)$   
 $\cot\left(2\pi - \frac{\pi}{3}\right)$   
 $- \cot\left(\frac{\pi}{3}\right)$   
 $-\frac{1}{\tan\frac{\pi}{3}} = -\frac{1}{\sqrt{3}}$

**II. Graphs of Cosecant and Secant**

2. Graph  $y = \sin(x)$  below.

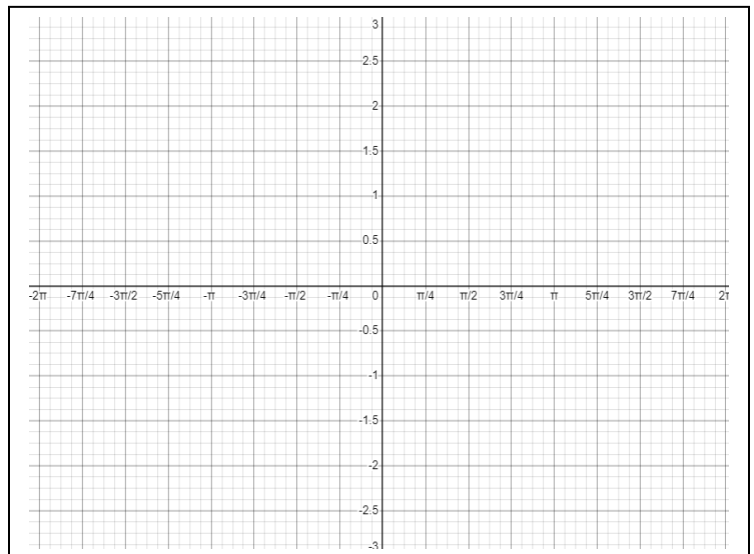
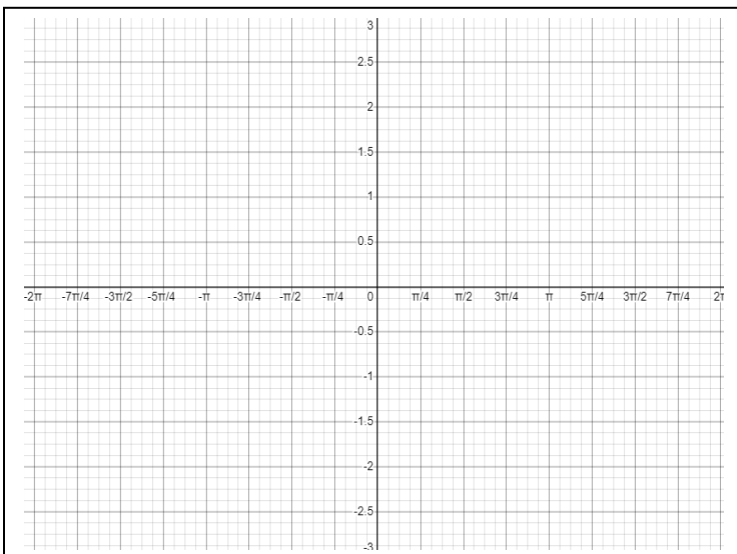
Graph  $y = \cos(x)$  below.



\*Now use your 2 graphs to graph cosecant and secant.

Graph  $y = \csc(x)$  below.

Graph  $y = \sec(x)$  below.



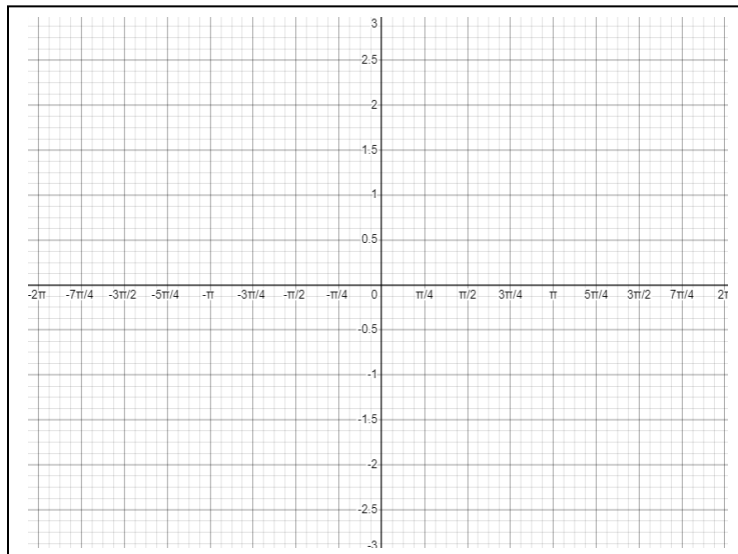
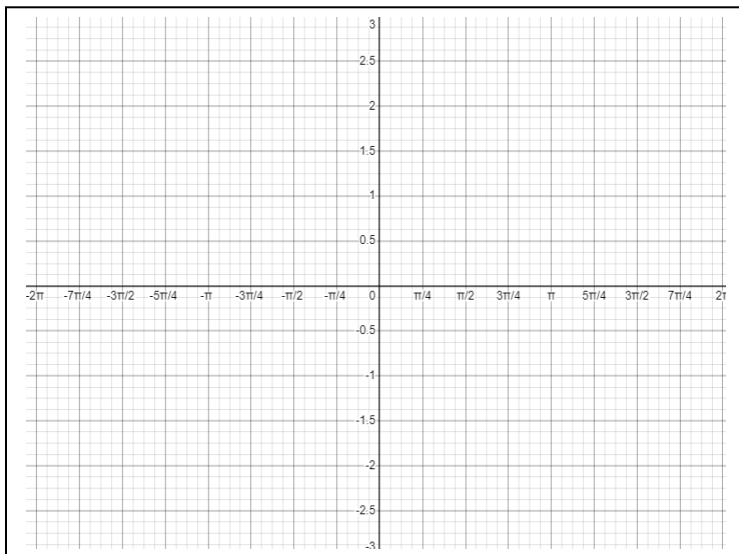
**III. Practice** – Graph the functions below. Be sure to include two full periods.

3.  $f(x) = 3 \csc(2x)$

Graph Desmos

4.  $f(x) = 3 \sec(\pi x) - 1$

Graph Desmos



5.  $f(x) = -2 \csc(x + \frac{\pi}{2})$

Graph Desmos

6.  $f(x) = -2 \sec(3x - \frac{\pi}{2})$

Graph Desmos

