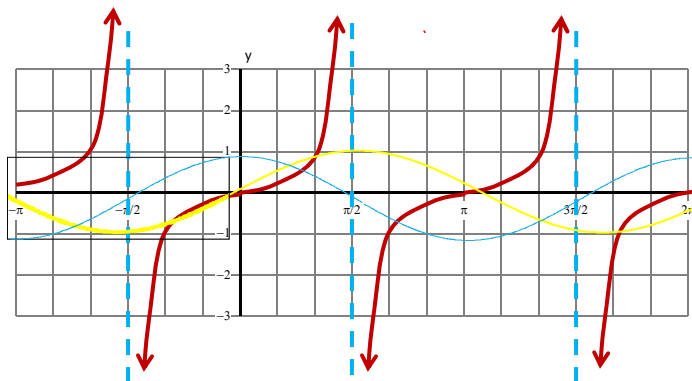


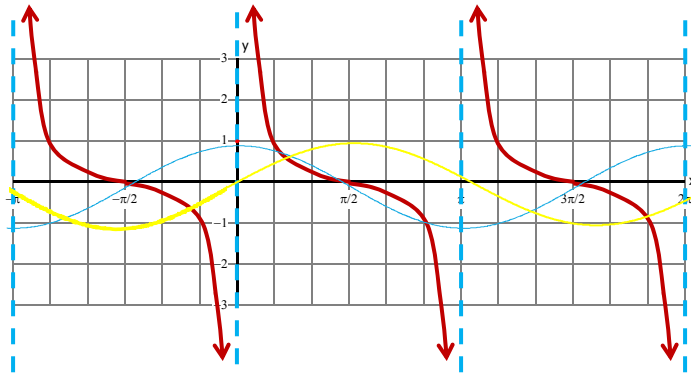
4-5: GRAPHS OF TANGENT, COTANGENT, SECANT AND COSECANT

I. TANGENT AND COTANGENT GRAPHS

-In radian mode $f(x) = \tan x = \frac{\sin x}{\cos x}$

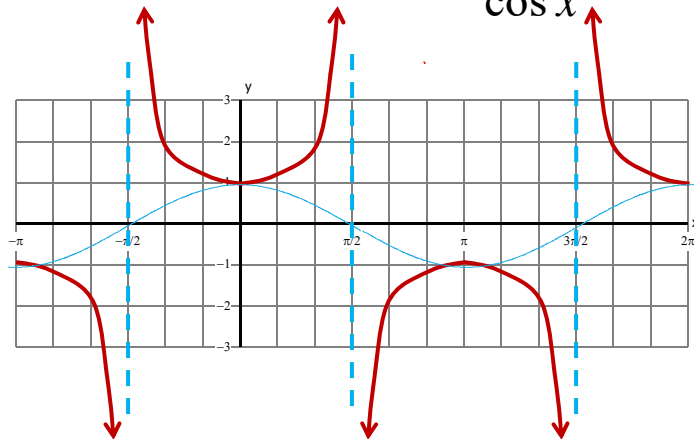


$$f(x) = \cot x = \frac{\cos x}{\sin x}$$

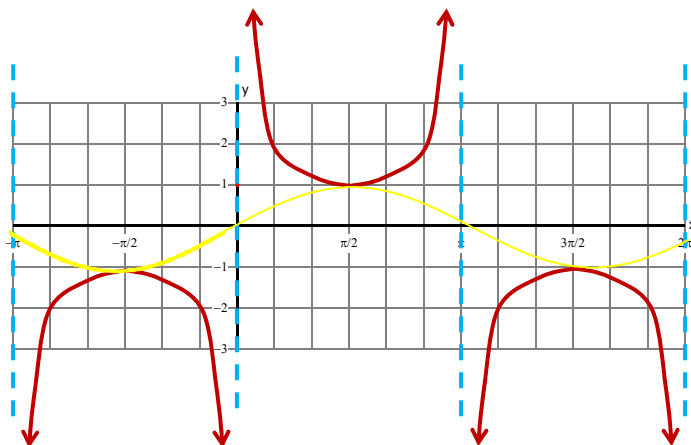


II. SECANT AND COSECANT GRAPHS

$$f(x) = \sec x = \frac{1}{\cos x}$$



$$f(x) = \csc x = \frac{1}{\sin x}$$



III. SOLVING TRIG EQUATIONS

Solve the following trig equations for x over the given interval.

A.) $\sec x = 2; 0 \leq x \leq \frac{\pi}{2}$

$$\sec x = 2$$

$$\therefore \cos x = \frac{1}{2}$$

$$x = \cos^{-1}\left(\frac{1}{2}\right)$$

$$x = \frac{\pi}{3}$$

B.) $\csc x = 2; 2\pi \leq x \leq \frac{5\pi}{2}$

$$\csc x = 2$$

$$\therefore \sin x = \frac{1}{2}$$

$$x = \sin^{-1}\left(\frac{1}{2}\right) \quad 2\pi \leq x \leq \frac{5\pi}{2}$$

$$x = \frac{\pi}{6}$$

$$x = \frac{13\pi}{6}$$