4/13/2011 W

§5.4 More trig graphs

(5.3 Loose end)

Useful Example:

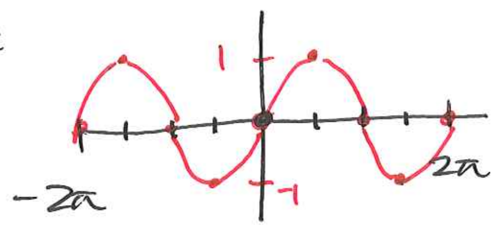
Sinc function:

↳ $y = \frac{\sin x}{x}$.

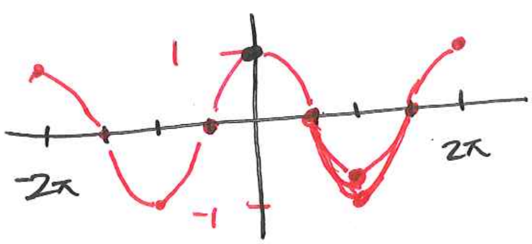
damped oscillating

as $x \to 0$, $y \to 1$
(can't plug in $x=0$).

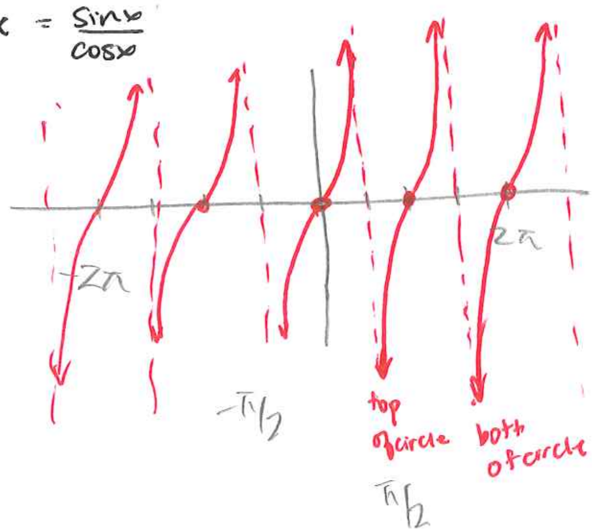
$y = \sin x$



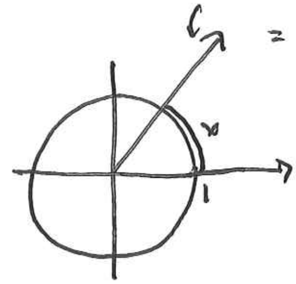
$y = \cos x$



$y = \tan x = \frac{\sin x}{\cos x}$



$\tan x = \text{slope} = \frac{\sin x}{\cos x}$



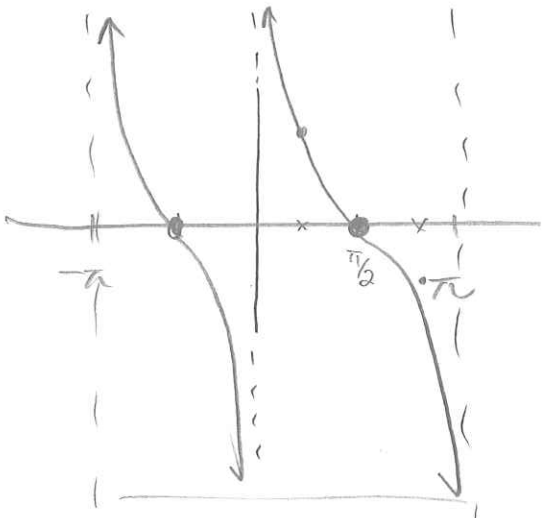
** period: π

$y = \cot x = \frac{\cos x}{\sin x} = \frac{1}{\tan x}$

VA when $\sin x = 0$

zeros when $\cos x = 0$

period π

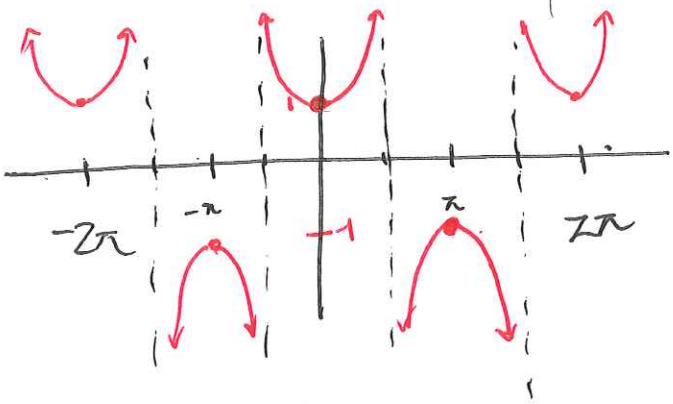


$y = \sec x = \frac{1}{\cos x}$

period 2π

VA when $\cos x = 0$

no horiz intercepts.

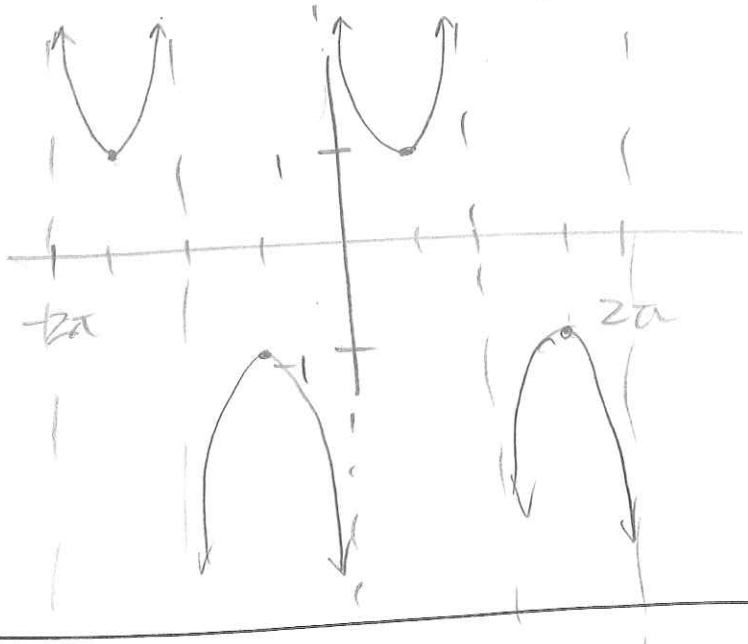


$y = \csc x = \frac{1}{\sin x}$

period 2π

VA when $\sin x = 0$

no horiz intercepts



Practice: Find period. Draw a sketch.

1.) $y = \tan(2x)$

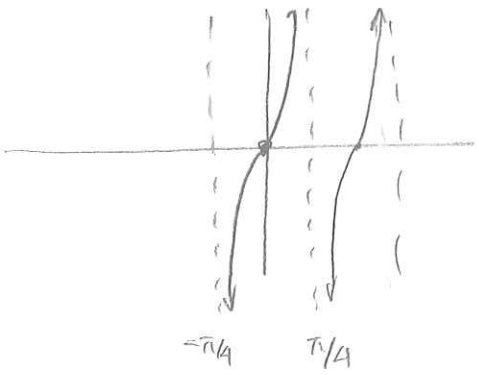
2.) $y = \tan(x - \pi/4)$

3.) $y = \frac{1}{2}\csc(\pi x)$

4.) $y = 2\sec(\pi(x-1)) + 3$

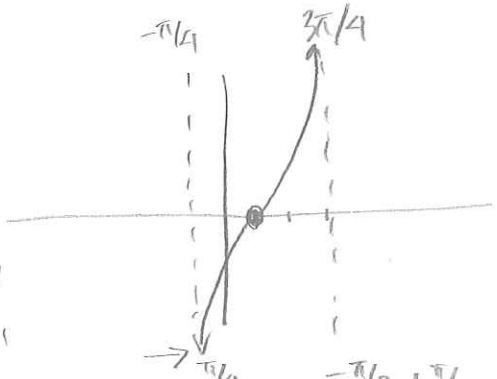
Answers:

1.) period $\pi/2$



2.) period π

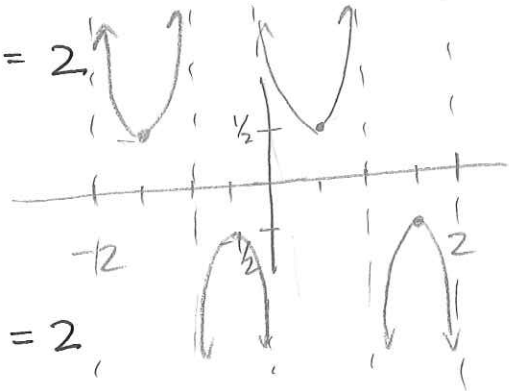
Shift to R $\pi/4$



$-\pi/4$; $-\pi/2 + \pi/4 = -\pi/4$

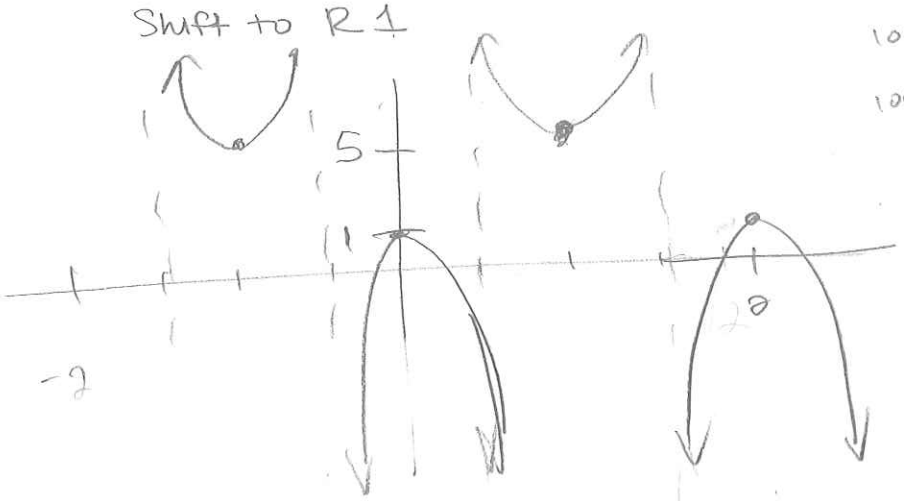
$\pi/2 + \pi/4 = 3\pi/4$

3.) period $2\pi/\pi = 2$



4.) period $2\pi/\pi = 2$

Shift to R 1



local max : $-1 = 2(-1) + 3 = 1$

local min : $1 = 2(1) + 3 = 5$

Important recap of 5.3 material for 5.5

$$y = a\sin(k(x-b)) + c \quad \text{or} \quad a\cos(k(x-b)) + c$$

$|a|$ = amp

$2\pi/k$ = period

b = phase shift

c = average