9/28/2012 Sec 2.5 Math 1060

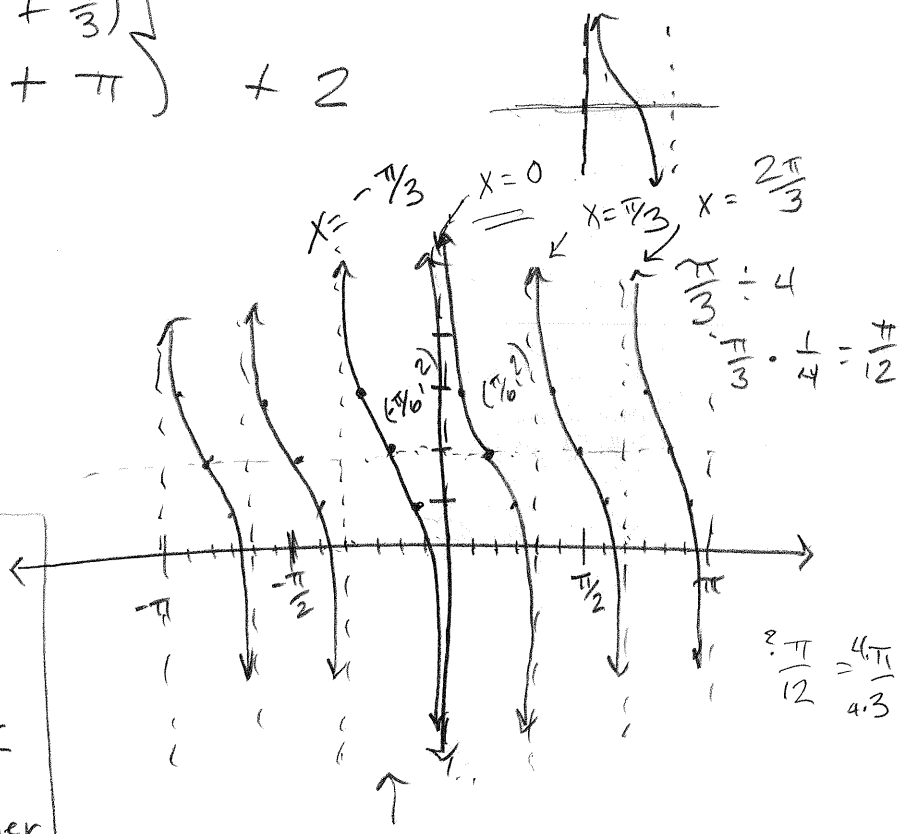
#46

$$y = \cot\left[3\left(x + \frac{\pi}{3}\right)\right] + 2$$

↑ 2 units

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

phase Shift $-\frac{\pi}{3}$ ←



Period: $\frac{\pi}{3}$

Asymptotes: $x = k\frac{\pi}{3}$

with k is any integer

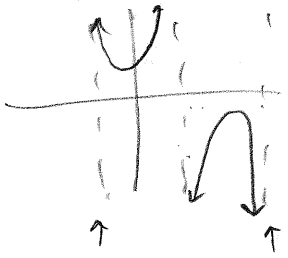
$k=-2$	$k=-1$	$k=0$	$k=1$	$k=2$	$k=3$	...
$x=\frac{-2\pi}{3}$	$x=-\frac{\pi}{3}$	$x=0$	$x=\frac{\pi}{3}$	$x=\frac{2\pi}{3}$	$x=\frac{3\pi}{3}=\pi$	

$\tan x, \cot x$

Asymptote: $x = \text{first asymptote} + k \cdot \text{period}$

$\sec x, \csc x$

Asymptote: $x = \text{first asymptote} + k\,\frac{\text{period}}{2}$

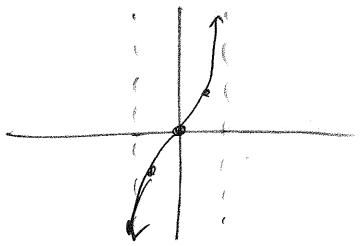


$\tan[B(X-C)]$ ← phase shift

π/B →

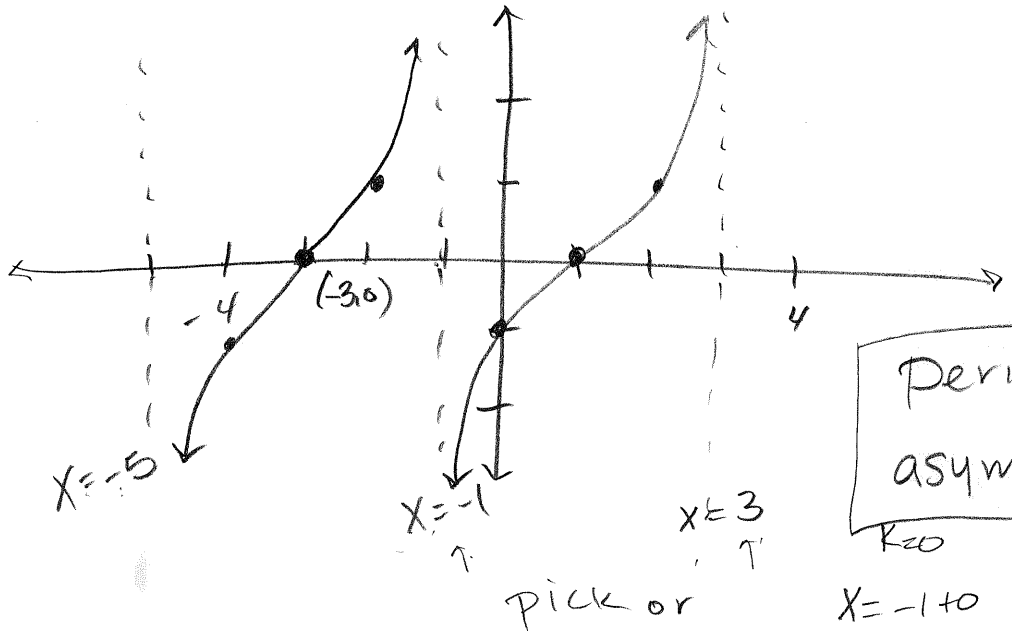
#38 $y = \tan\left(\frac{\pi}{4}X + \frac{3\pi}{4}\right)$

$y = \tan\left[\frac{\pi}{4}(X+3)\right]$



Period $= \frac{\pi}{\pi/4} = \pi \cdot \frac{4}{\pi} = 4$

phase shifting: ← -3



pick or

Check (3,0)

$0 = \tan\left(\frac{\pi}{4}\cdot 3 + \frac{3\pi}{4}\right)$

Period = 4

asymptotes: $X = -1 + 4K$

K=0	K=1
$X = -1+0$	$X = -1+4$
	$= 3$

K=-1

$X = -1 + 4(-1)$

$= -5$ ✓

Sec 2.5 Combining functions

$y = X + \sin X$

$=$ line + sinewave

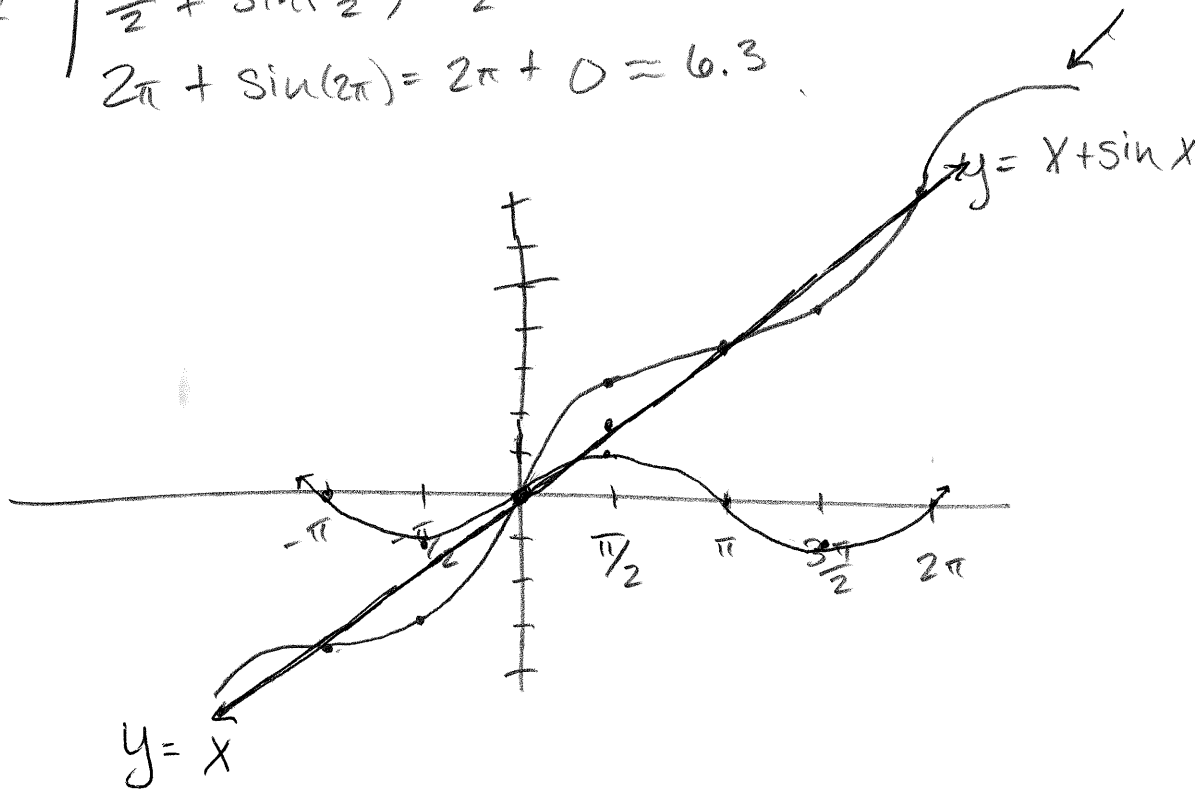
Graphs: Rough Sketch

Graph by creating a table

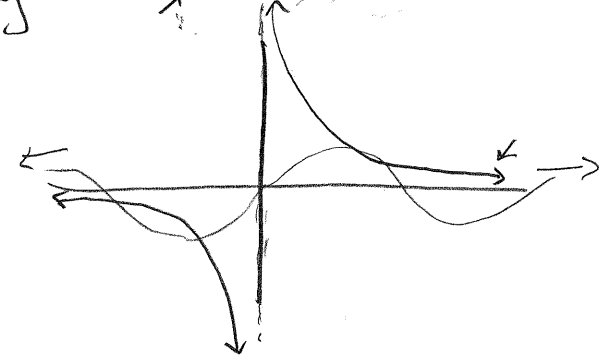
$y = x + \sin x$

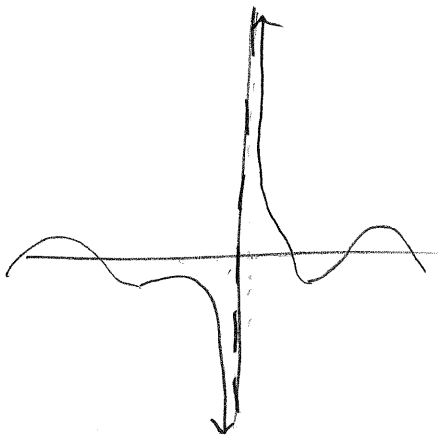
table

x	y
$-\pi$	$-\pi + \sin(-\pi) = -\pi \approx -3.14$
$-\pi/2$	$-\frac{\pi}{2} + \sin(-\pi/2) = -\frac{\pi}{2} + -1 = -2.6$
0	$0 + \sin(0) = 0$
$\pi/2$	$\pi/2 + \sin(\pi/2) = \frac{\pi}{2} + 1 = 2.6$
π	$\pi + \sin(\pi) = \pi + 0 = 3.14$
$3\pi/2$	$\frac{3\pi}{2} + \sin(\frac{3\pi}{2}) = \frac{3\pi}{2} + -1 = 3.7$
2π	$2\pi + \sin(2\pi) = 2\pi + 0 = 6.3$



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





π 2π

$y = \sin(2x) + \cos(x)$

$y = |x| + \sin(\pi x)$