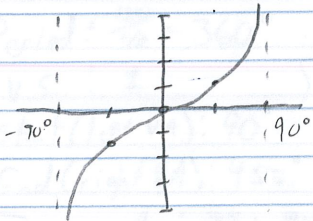


8-1

Graphing Tan - Cot

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



$$\text{Period} = 180^\circ \text{ or } \pi$$

$$\text{Vert. Shift} = d$$

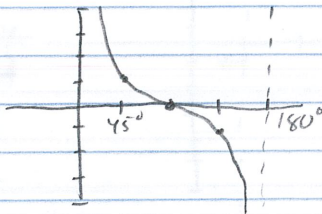
$$f(x) = a \tan(\underline{bx+c}) + d$$

Vert. Asymptotes:

$$\text{Left (Start)}: bx+c = -90^\circ / \frac{\pi}{2}$$

$$\text{Right (End)}: \text{Start} + \text{Period}$$

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



$$\text{Period} = 180^\circ \text{ or } \pi$$

$$\text{Vert. Shift} = d$$

$$f(x) = a \cot(\underline{bx+c}) + d$$

Vert. Asymptotes:

$$\text{Left (Start)}: bx+c = 0$$

$$\text{Right (End)}: \text{Start} + \text{Period}$$

Ex 1: $f(x) = 2 \tan(x-90) + 3$

$$\text{Period: } \frac{180}{b} = \frac{180}{1} = 180^\circ$$

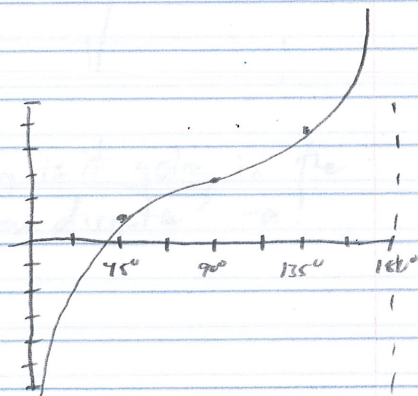
$$\text{VS: } 3$$

$$\text{Start (Left VA): } 0^\circ \rightarrow x-90 = -90 \rightarrow x=0$$

$$\text{End (right VA): } 180^\circ$$

$$\text{Increments: } \frac{180}{4} = 45^\circ$$

x	y
0	VA
45	1
90	3
135	5
180	VA



(cont)

Ex 2: $F(x) = 3 \cot\left(\frac{1}{2}x - 45^\circ\right) + 1$

Period: $\frac{180}{1/2} = 360^\circ$

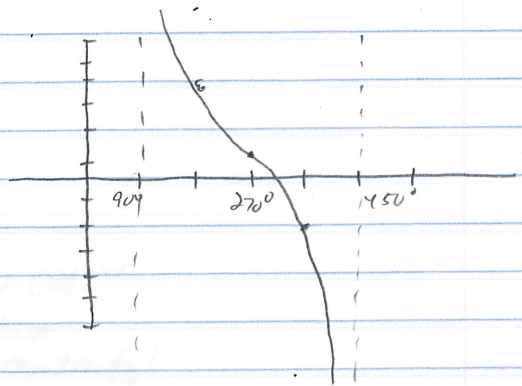
V.S. = 1

Start (left VA): 90°

End (right VA): 450°

Increments: $\frac{360}{4} = 90^\circ$

X	Y
90°	VA
180°	4
270°	1
360°	-2
450°	VA



Ex 3: $F(x) = -2 \cot\left(2x - \frac{\pi}{2}\right) + 1$

Period: $\frac{\pi}{2} = \frac{\pi}{2}$

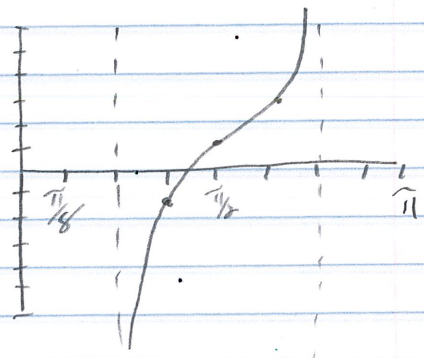
V.S. = 1

Start (left VA): $\frac{\pi}{4}$

End (right VA): $3\frac{\pi}{4}$

Inc: $\frac{\pi/2}{4} = \frac{\pi}{8}$

X	Y
$\frac{\pi}{4}$	VA
$3\frac{\pi}{8}$	-1
$\frac{\pi}{2}$	1
$5\frac{\pi}{8}$	3
$3\frac{\pi}{4}$	VA



Why is it going in the
tan direction? $-a!$

CW/HW: What 4.8