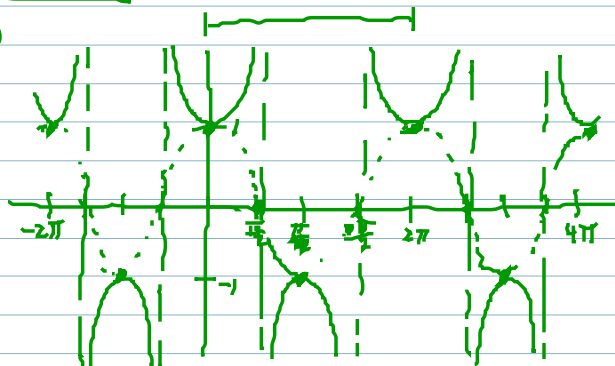


$$D: \{x : x \neq n\pi, n \in \mathbb{Z}\}$$

$$R: (-\infty, -1] \cup [1, \infty)$$

sec(x)



$$x \neq \frac{\pi(2n+1)}{2}$$

$$D: \{x : x \neq \frac{\pi}{2} + \pi n, n \in \mathbb{Z}\}$$

$$R: (-\infty, -1] \cup [1, \infty)$$

$f(x) = 2 \csc(\frac{1}{2}x) + 1$

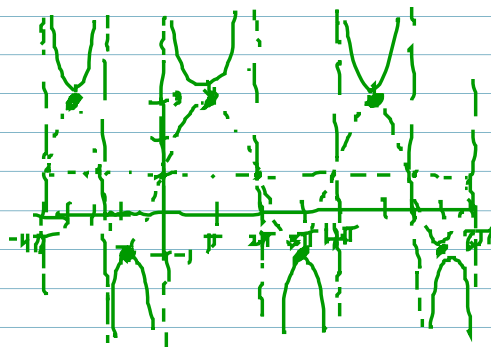
$A = 2$

$T = \frac{2\pi}{\frac{1}{2}} = \frac{2\pi}{1} \cdot \frac{2}{1} = 4\pi$

$VS = \uparrow$

$PS = \text{None}$

$R = \text{None}$



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

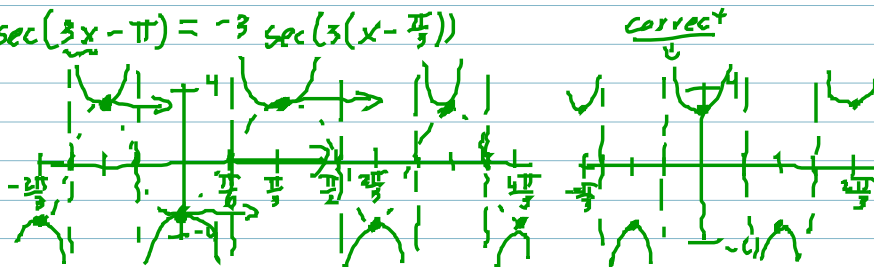
$A = 3$

$T = \frac{2\pi}{3}$

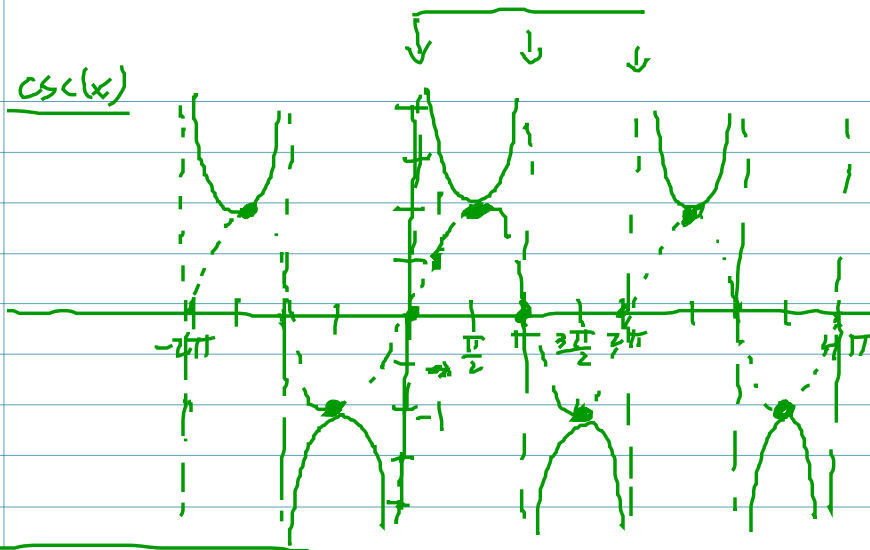
$VS = \text{None}$

$PS = \frac{\pi}{3} \rightarrow$

$R = \mathbb{R}$



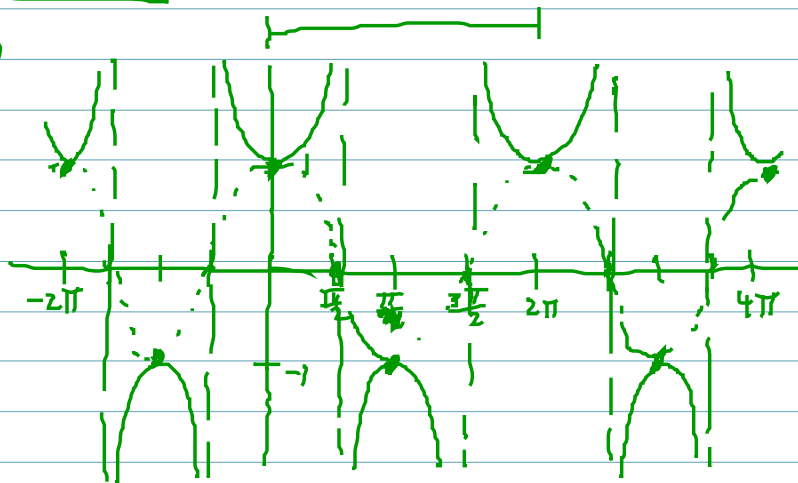
csc(x)



$$D: \{x : x \neq n\pi, n \in \mathbb{Z}\}$$

$$R: (-\infty, -1] \cup [1, \infty)$$

sec(x)



$$x \neq \frac{\pi(2n+1)}{2}$$

$$D: \{x : x \neq \frac{\pi}{2} + \pi n, n \in \mathbb{Z}\}$$

$$R: (-\infty, -1] \cup [1, \infty)$$

$$f(x) = 2 \csc\left(\frac{1}{2}x\right) + 1$$

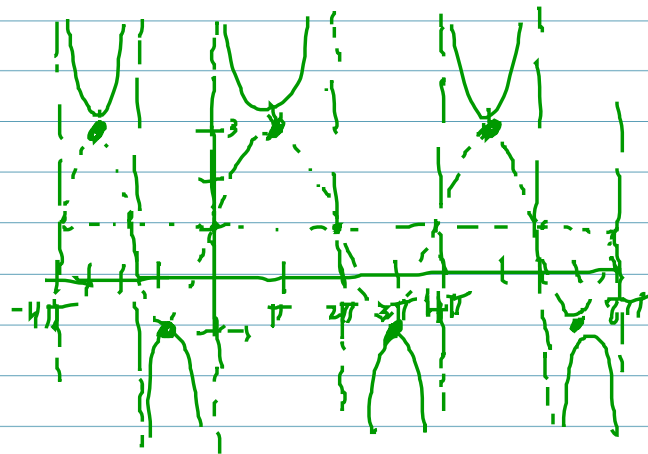
$$A = 2$$

$$T = \frac{2\pi}{1/2} = \frac{2\pi}{1} \cdot \frac{2}{1} = 4\pi$$

$$VS = \uparrow$$

$$PS = \text{None}$$

$$R = \text{None}$$



$$f(x) = -3 \sec\left(\frac{1}{3}x - \pi\right) = -3 \sec\left(\frac{1}{3}\left(x - \frac{\pi}{3}\right)\right)$$

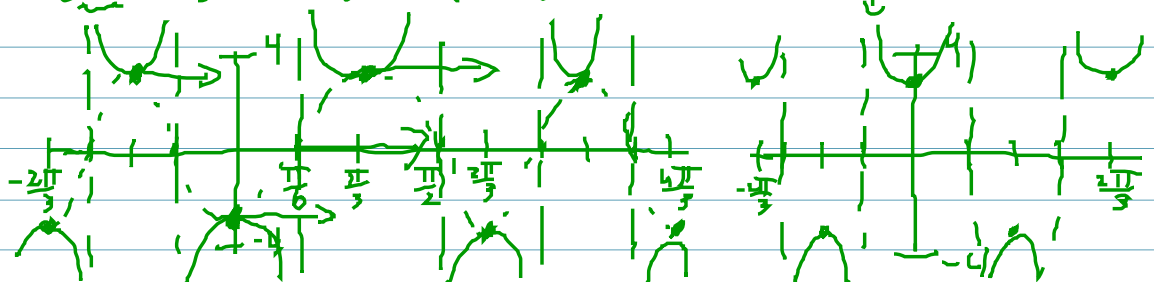
$$A = 3$$

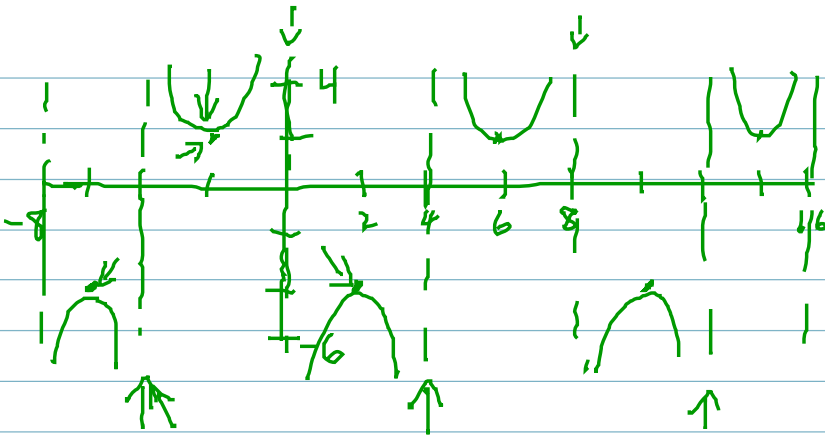
$$T = \frac{2\pi}{1/3}$$

$$VS = \text{None}$$

$$PS = \frac{\pi}{3} \rightarrow$$

$$R = \checkmark$$





$$A = \frac{2 - (-4)}{2} = \frac{6}{2} = 3$$

$$T = 8 \quad b = \frac{2\pi}{8} = \frac{\pi}{4}$$

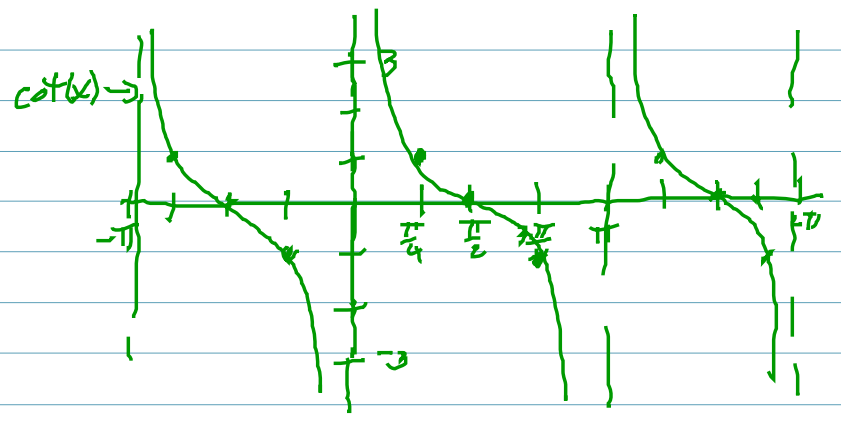
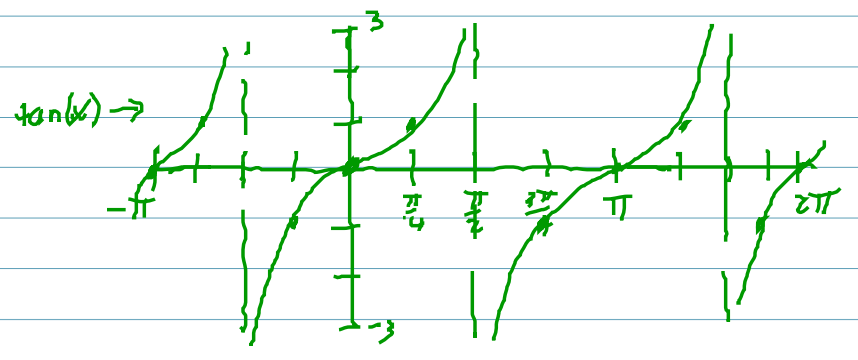
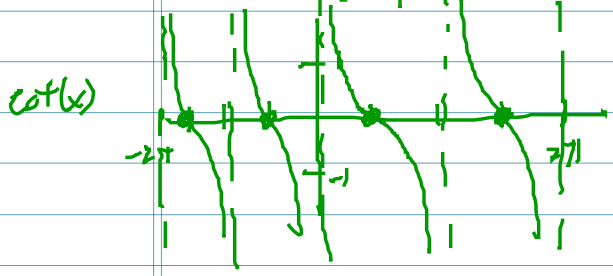
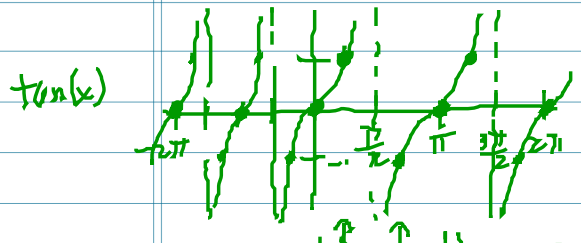
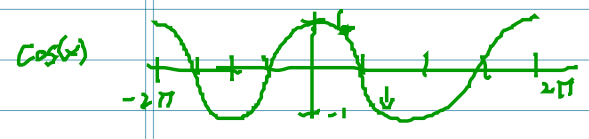
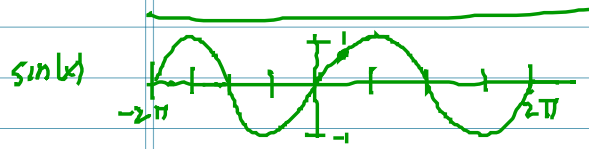
$$v_s = \frac{2 + (-4)}{2} = \frac{-2}{2} = -1$$

$$f(x) = 3 \csc\left(\frac{\pi}{4}(x+4)\right) - 1$$

$$= -3 \csc\left(\frac{\pi}{4}(x-2)\right) - 1$$

$$= 3 \sec\left(\frac{\pi}{4}(x+2)\right) - 1$$

$$= -3 \sec\left(\frac{\pi}{4}(x-2)\right) - 1$$



tan(x)

cot(x)

D:  $\{x: x \neq \frac{(2n+1)\pi}{2}, n \in \mathbb{Z}\}$

D:  $\{x: x \neq n\pi, n \in \mathbb{Z}\}$

R:  $(-\infty, \infty)$

R:  $(-\infty, \infty)$

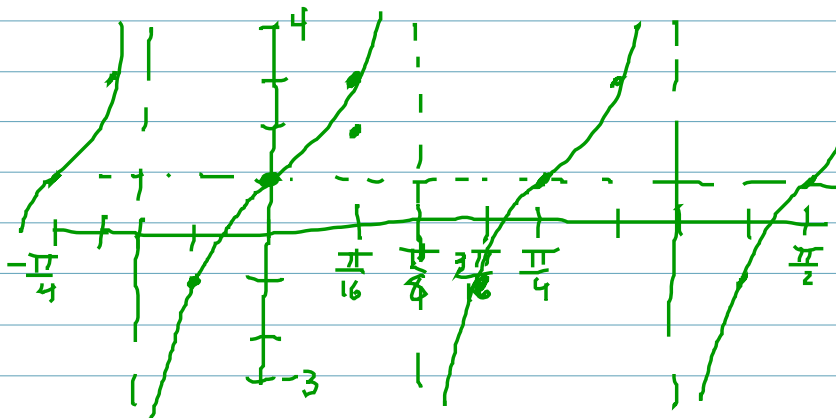
Period  $\rightarrow \pi$

$T = \frac{\pi}{b}$

$b = \frac{\pi}{T}$

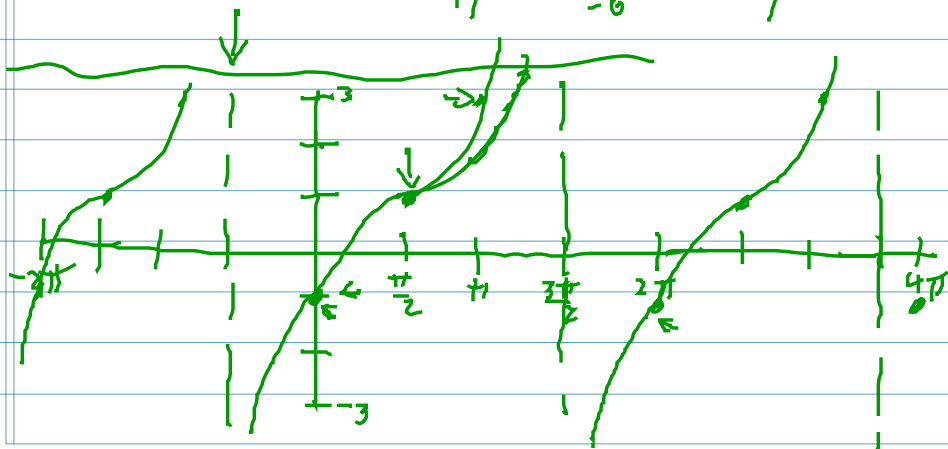
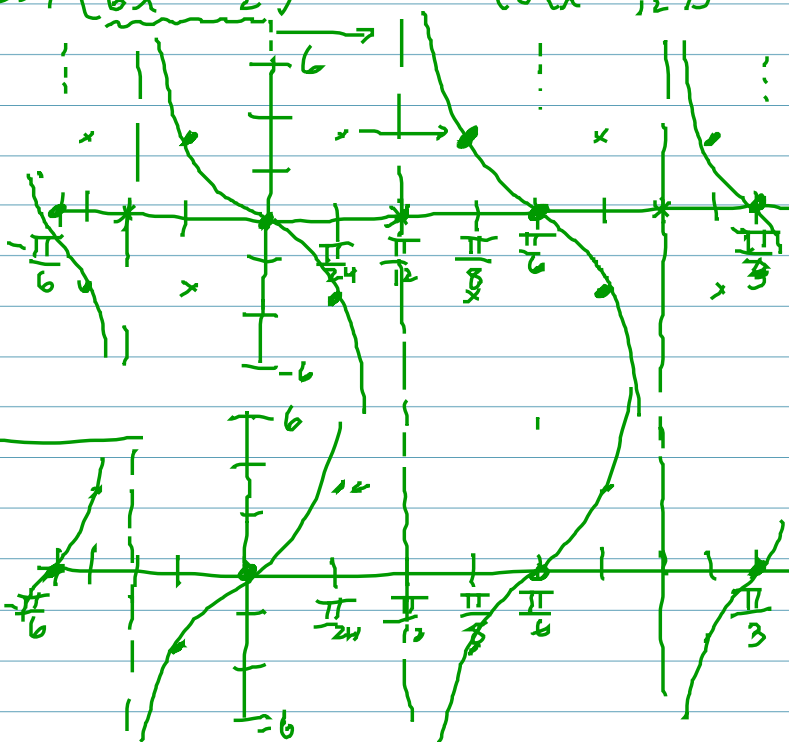
$$f(x) = 2 \tan(4x) + 1$$

$A = 2 \leftarrow$   
 $T = \frac{\pi}{4}$   
 $VS = \uparrow 1$   
 $PS = \text{NONE}$   
 $R = \text{NONE}$



$$f(x) = -3 \cot\left(6x - \frac{\pi}{2}\right) \quad \left(6\left(x - \frac{\pi}{12}\right)\right)$$

$A = 3$   
 $T = \frac{\pi}{6}$   
 $VS = \text{NONE}$   
 $PS = \frac{\pi}{12} \rightarrow$   
 $R = \checkmark$



$$\begin{aligned}
 A &= \frac{2-1}{2} = \frac{1}{2} = 2 \\
 T &= 2\pi \quad b = \frac{\pi}{2\pi} = \frac{1}{2} \\
 VS &= \frac{3+1}{2} = \frac{2}{2} = 1
 \end{aligned}$$

$$\begin{aligned}
 f(x) &= 2 \tan\left(\frac{1}{2}\left(x - \frac{\pi}{2}\right)\right) + 1 \\
 &= -2 \cot\left(\frac{1}{2}\left(x + \frac{\pi}{2}\right)\right) + 1
 \end{aligned}$$