

4.6 Graphs of other Trigonometric Functions Worksheet-Day 1

Tangent & Cotangent

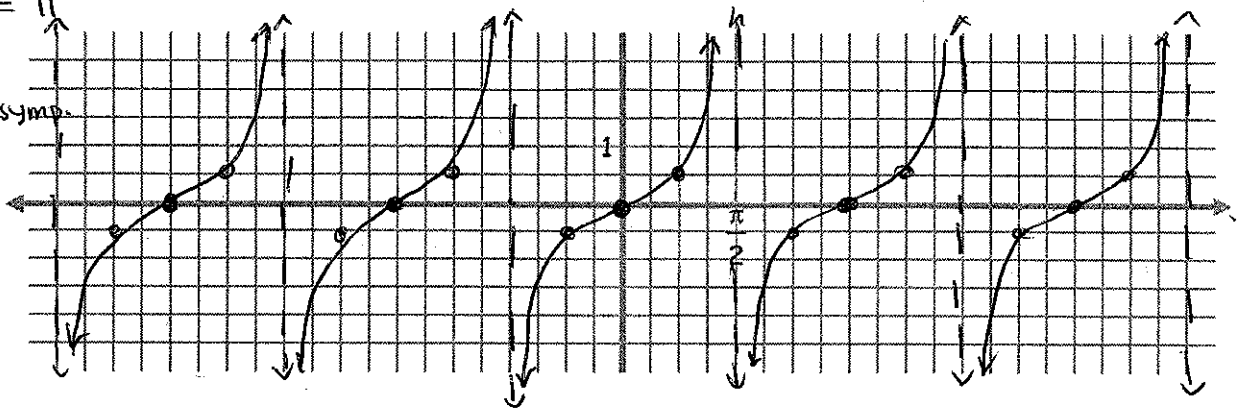
Sketch each of the following graphs. Include as many periods as possible.

1.  $f(x) = \frac{1}{2} \tan x$  increase \*  $b=1$  \*  $a = \frac{1}{2}$

\* Per:  $\frac{\pi}{1} = \pi$

\*  $x = \frac{\pi}{2}$   
\*  $x = -\frac{\pi}{2}$  } asymp.

\* imp val  $\frac{\pi}{4}$



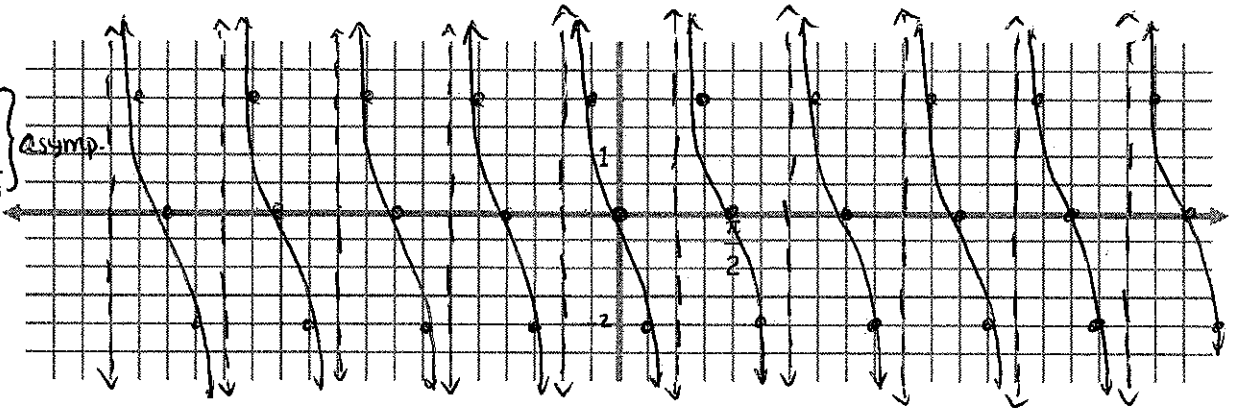
2.  $g(x) = -2 \tan 2x$  \*  $b=2$  \*  $a=2$

Reflect (decrease)

\* Per:  $\frac{\pi}{2}$

\*  $2x = \frac{\pi}{2} = \frac{\pi}{4}$   
\*  $2x = -\frac{\pi}{2} = -\frac{\pi}{4}$  } asymp.

\* imp val  $\frac{\pi}{4} = \frac{\pi}{8}$

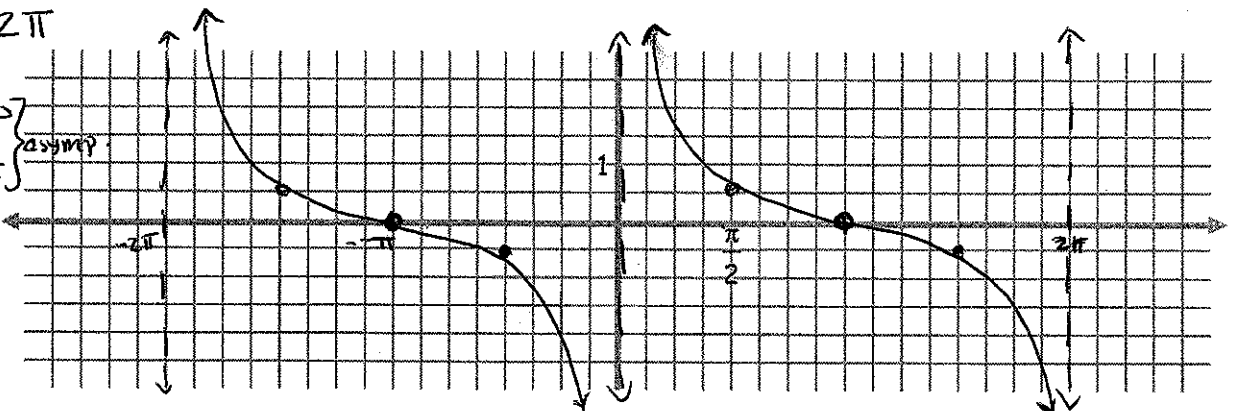


3.  $h(x) = \frac{1}{2} \cot \frac{x}{2}$  decrease \*  $b = \frac{1}{2}$  \*  $a = \frac{1}{2}$

\* Per:  $\frac{\pi}{\frac{1}{2}} = 2\pi$

\*  $\frac{x}{2} = 0$   $x=0$   
\*  $\frac{x}{2} = \pi = 2\pi$  } asymp.

\* imp val  $\frac{\pi}{4}$   
\*  $\frac{2\pi}{4} = \frac{\pi}{2}$



For #4 and #5 use your graphing calculator to approximate the solution(s) to the equation on the interval  $[-2\pi, 2\pi]$ .

4.  $\tan x = 1$

$$Y_1 = \tan x$$

$$Y_2 = 1$$

Window:

$$x_{\min} = -2\pi$$

$$x_{\max} = 2\pi$$

$$x_{\text{scale}} = \pi/6$$

$$y_{\min} = -3$$

$$y_{\max} = 3$$

$$\text{scale} = 1$$

$$x \approx -5.498$$

$$x \approx -2.356$$

$$x \approx 0.785$$

$$x \approx 3.927$$

5.  $\cot x = -\sqrt{3}$

$$Y_1 = \cot x$$

$$Y_2 = -\sqrt{3}$$

Window

$$x_{\min} = -2\pi$$

$$x_{\max} = 2\pi$$

$$x_{\text{scale}} = \pi/6$$

$$y_{\min} = -3$$

$$y_{\max} = 3$$

$$\text{scale} = 1$$

$$x \approx -3.665$$

$$x \approx -0.524$$

$$x \approx 2.618$$

$$x \approx 5.760$$