

TANGENT FUNCTION

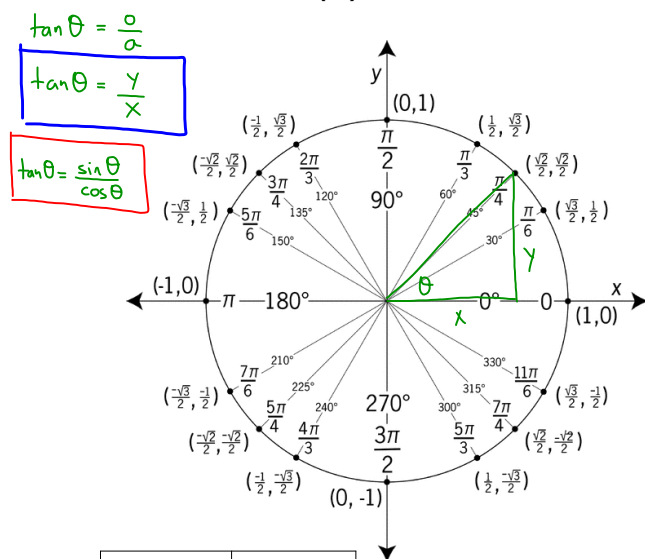
Goal:

- to understand the characteristics of the tangent function

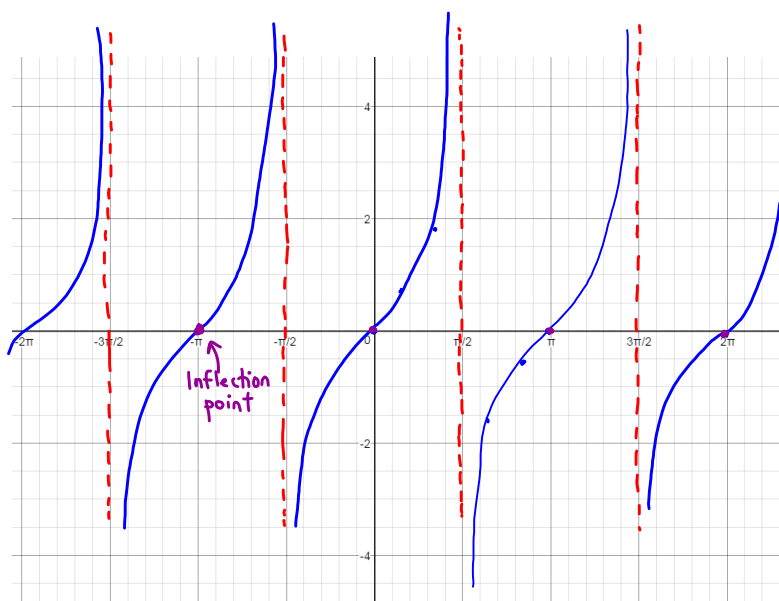
p.108 #5,8

The basic tangent function is:

$$f(x) = \tan x$$



θ	$f(\theta)$
0	0
$\frac{\pi}{6}$	$\frac{1/\sqrt{3}}{1} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3} \approx 0.577$
$\frac{\pi}{3}$	$\frac{1/\sqrt{3}}{1/\sqrt{3}} = 1$
$\frac{\pi}{2}$	$\frac{1}{0} = \text{undefined} \rightarrow \text{Vertical asymptote}$
$\frac{2\pi}{3}$	$\frac{1/\sqrt{3}}{-1/\sqrt{3}} = -1$
$\frac{5\pi}{6}$	$\frac{1/\sqrt{3}}{-1} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$
π	0



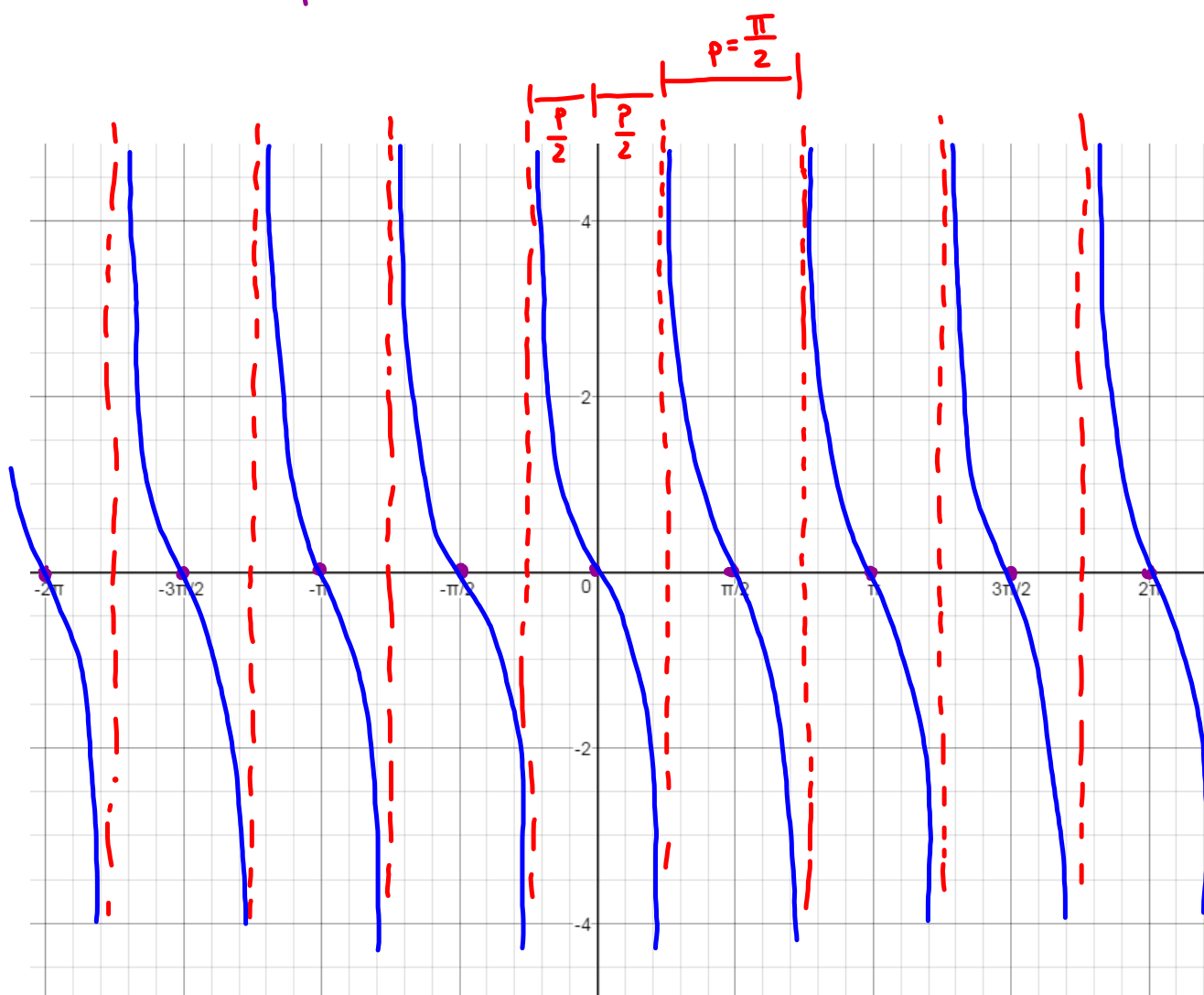
The tangent function has infinite vertical asymptotes

The period of the basic function is π .

What does the graph of the function $f(x)=\tan(-2x)$ look like? ↙ hor. reflection

For transformed tangent function $\text{period} = \frac{\pi}{|b|}$

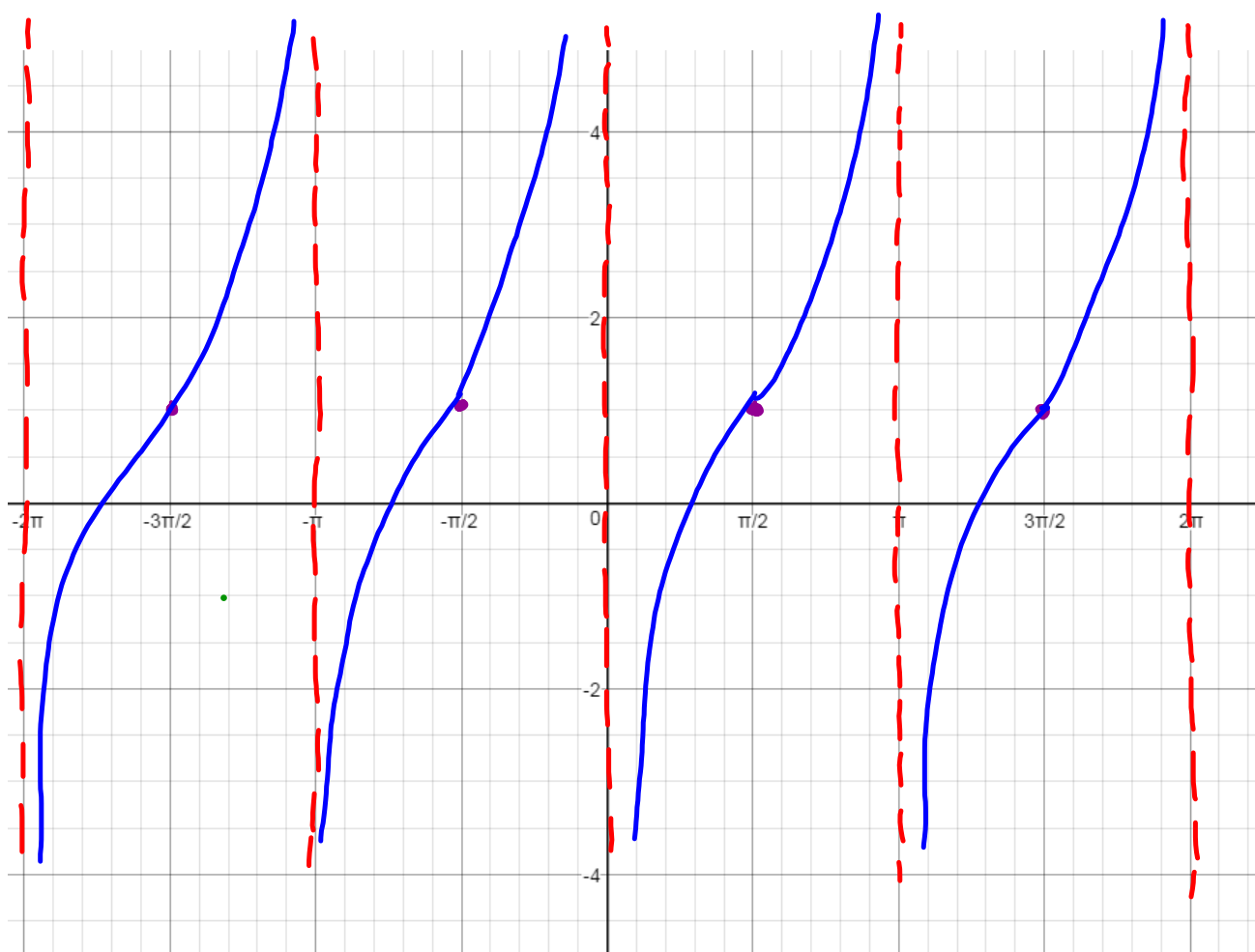
$$p = \frac{\pi}{|-2|} = \frac{\pi}{2}$$



What does the graph of the function $g(x) = \tan(x - \frac{\pi}{2}) + 1$?

$$(h, k) = \left(\frac{\pi}{2}, 1\right) \text{ Inflection pt.}$$

$$p = \pi$$



The transformed tangent function can be represented by:

$$f(x) = a \tan b(x-h) + k$$

Inflection pt. (h, k)

$$\text{period} = \frac{\pi}{|b|}$$

