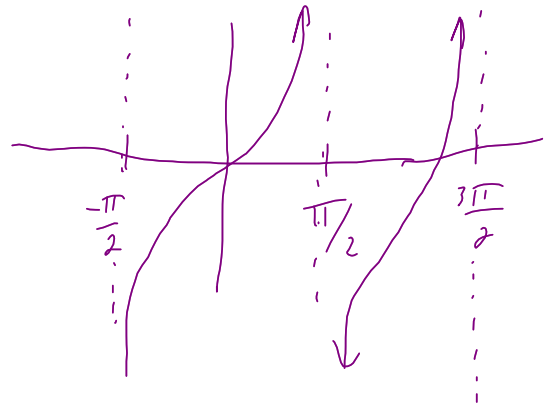


tangent function

$$\text{Period} = \frac{\pi}{b}$$



One cycle is from $\frac{\pi}{2}$ to $\frac{3\pi}{2}$

or $-\frac{\pi}{2}$ to $\frac{\pi}{2}$

* every $\frac{\pi}{2}$ is a vertical asymptote *

Identify the period and determine where two asymptotes occur for each function.

$$1) y = 3 \tan \frac{2}{3} \theta$$

$$\text{Period: } \frac{\pi}{\frac{2}{3}} = \frac{3\pi}{2}$$

$$\text{Asymptotes: } -\frac{3\pi}{4}, \frac{3\pi}{4}$$

$$3) y = 5 \tan \frac{\theta}{2}$$

$$\text{Period} = \frac{\pi}{\frac{1}{2}} = 2\pi$$

$$\text{Asymptotes} = -\pi, \pi$$

$$2) y = \tan \frac{\pi}{3} \theta$$

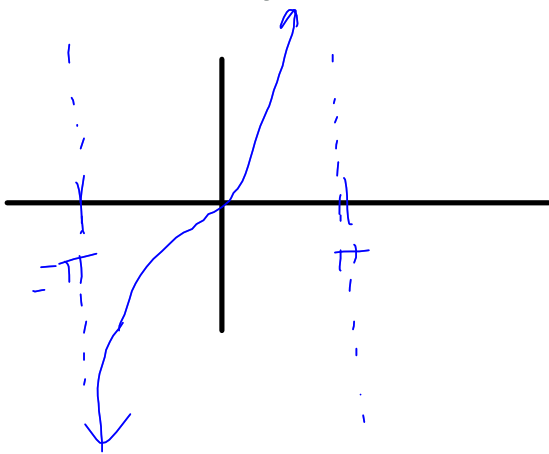
$$\text{Period} = \frac{\pi}{\frac{\pi}{3}} = 3$$

$$\text{Asymptotes} \\ -1.5, 1.5$$

Identify the period for each tangent function. Then graph each function in the interval from -2π to 2π .

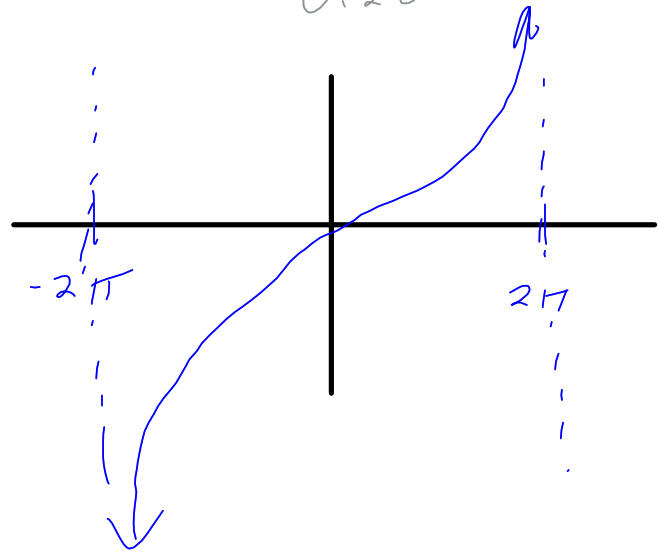
$$4) y = \tan \frac{1}{2} \theta$$

$$\text{Period} = \frac{\pi}{\frac{1}{2}} = 2\pi$$



$$5) y = \tan(0.25\theta)$$

$$\text{Period} = \frac{\pi}{0.25} = 4\pi$$



Use the function $y = 150 \tan x$ on the interval $0^\circ \leq x \leq 141^\circ$. Complete each ordered pair. Round your answers to the nearest whole number.

$$6) (x, -150)$$

$$\frac{-150}{150} = \frac{\cancel{150}}{\cancel{150}} \tan x$$

$$-1 = \tan x$$

$$x = 135^\circ$$

$$7) (x, 8594)$$

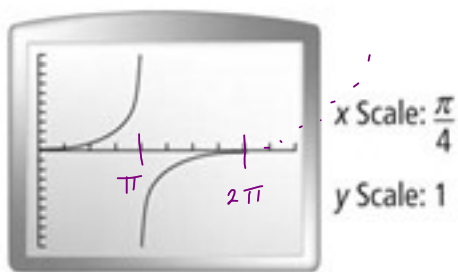
$$8594 = 150 \tan x$$

$$\tan^{-1}\left(\frac{8594}{150}\right) = x$$

$$x = 89^\circ$$

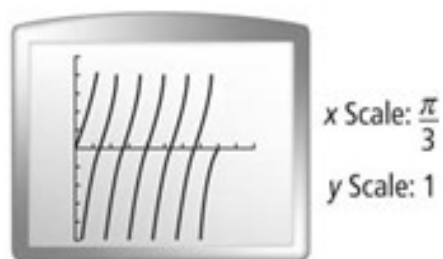
Each graphing calculator screen shows the interval 0 to 2π . What is the period of each graph?

8)



Period = 2π

9)



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