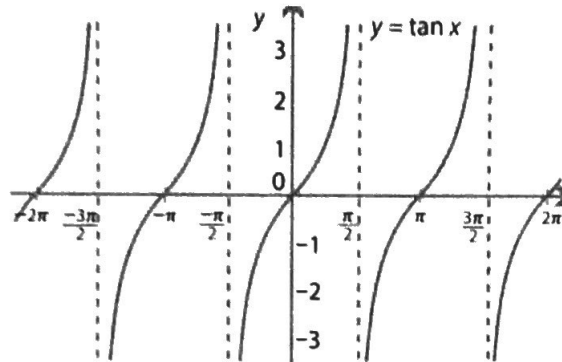


Name: Key Hour: _____ Date: _____

Graphing the Tangent Function Notes (Two Cycles)



Key Features:

- Equation: $y = a \tan b \theta$
- Period = $\frac{\pi}{b}$
- One Cycle: occurs between $-\frac{\pi}{2b}$ to $\frac{\pi}{2b}$
- Asymptotes:
vertical asymptotes at the end of each cycle

We will still make a table when we graph Tangent, however the table will be set up differently than it was for sine and cosine!

Examples: Graph two-cycles of the following functions.

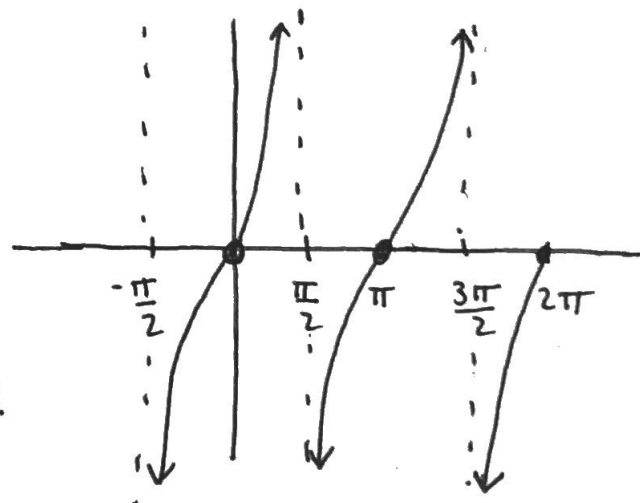
1) $y = \tan \theta$

$a = 1$ $b = 1$

Period:

$$\frac{\pi}{b} = \frac{\pi}{1} = \pi$$

θ	y
$0 (\pi) = 0$	0
$\frac{1}{2} (\pi) = \frac{\pi}{2}$	undef.
$1 (\pi) = \pi$	0
$\frac{3}{2} (\pi) = \frac{3\pi}{2}$	undef.
$2 (\pi) = 2\pi$	0

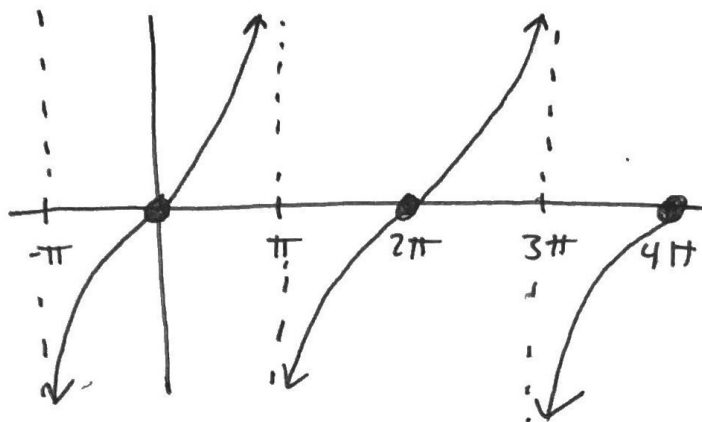


$$2) y = \tan \frac{\theta}{2}$$

$$a = 1 \quad b = \frac{1}{2}$$

$$P = \frac{\pi}{b} = \frac{\pi}{\frac{1}{2}} = 2\pi$$

θ	y
$0(2\pi) = 0$	0
$\frac{1}{2}(2\pi) = \pi$	undef.
$1(2\pi) = 2\pi$	0
$\frac{3}{2}(2\pi) = 3\pi$	undef.
$2(2\pi) = 4\pi$	0



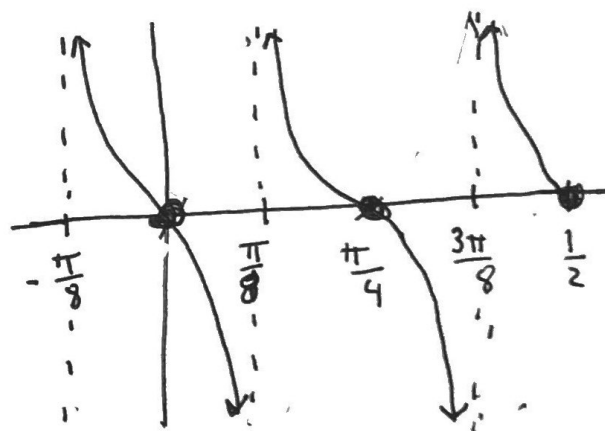
$$3) y = -2 \tan 4\theta$$

$$a = -2 \quad b = 4$$

Period:

$$\frac{\pi}{b} = \frac{\pi}{4}$$

θ	y
$0(\frac{\pi}{4}) = 0$	0
$\frac{1}{2}(\frac{\pi}{4}) = \frac{\pi}{8}$	undef.
$1(\frac{\pi}{4}) = \frac{\pi}{4}$	0
$\frac{3}{2}(\frac{\pi}{4}) = \frac{3\pi}{8}$	undef.
$2(\frac{\pi}{4}) = \frac{\pi}{2}$	0



$$4) y = -\tan \frac{2\pi\theta}{3}$$

$$a = -1 \quad b = \frac{2\pi}{3}$$

Period:

$$P = \frac{\pi}{b} = \frac{\pi}{\frac{2\pi}{3}} = \frac{3}{2}$$

θ	y
$0(3/2) = 0$	0
$\frac{1}{2}(3/2) = 3/4$	undef
$1(3/2) = 3/2$	0
$\frac{3}{2}(3/2) = 9/4$	undef
$2(3/2) = 3$	0

