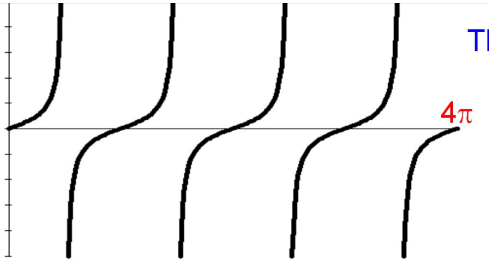


The graph of y=tanθ

$\text{Tan}\theta = \frac{\text{Sin}\theta}{\text{Cos}\theta}$

What are the Vertical Asymtpotes? $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2}, \ldots$

When Cosθ=0

What are the x-intercepts? $0, \pi, 2\pi, 3\pi, 4\pi, \ldots$

When Sinθ = 0

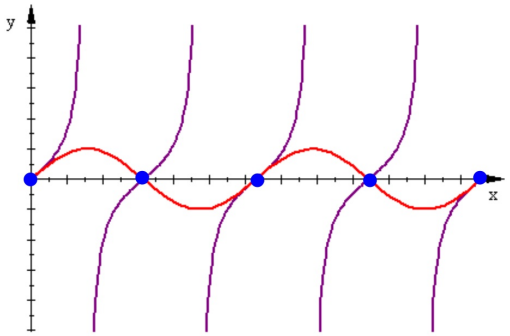
What is the period of Tanθ? the graph shows four cycles from 0 to 4π therefore each cycle is only π wide. Therefore, the

Period = π

The graphs of

Tanx and Sinx

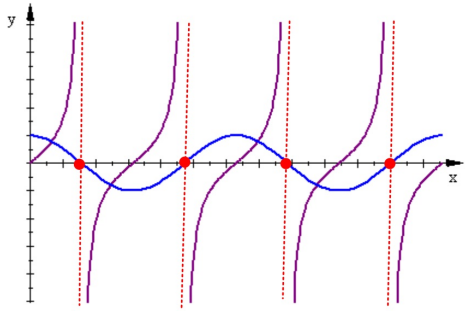
Tanx is zero whenever Sinx is zero.



The graphs of

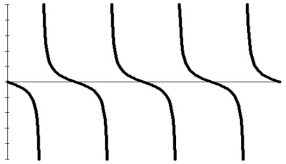
Tanx and Cosx

Tanθ has a VA whenever Cosθ is zero.



$y = a\text{Tan}(bx) = a\frac{\text{Sin}(bx)}{\text{Cos}(bx)}$

a: If a<0 there is an x-axis reflection →



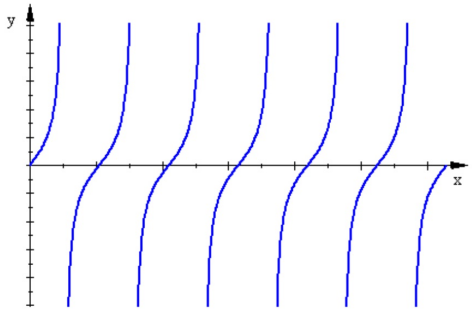
b: The period of Tanbx = $\frac{\pi}{b}$

$b = \frac{\pi}{\text{period}}$ b = # cycles from 0 to π

VA occur wherever Cos(bx)=0

x-int occur wherever Sin(bx)=0

The Tangent function is graphed in the window 0 to 2π.



1. What is the period?

$\frac{2\pi}{6} = \frac{\pi}{3}$

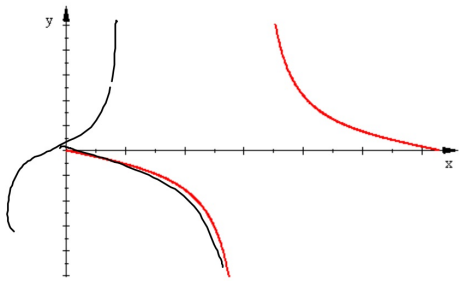
2. What is the equation of this Tangent Function?

$b = \frac{\pi}{\frac{\pi}{3}} = \frac{\pi \cdot 3}{\pi}$

$b = 3$

$y = \tan 3x$

The Tangent function is graphed in the window 0 to 2π.



1. What is the period?

2π

2. What is the equation of this Tangent Function?

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

$y = -\tan\frac{x}{2}$

$y = \tan(2\theta)$

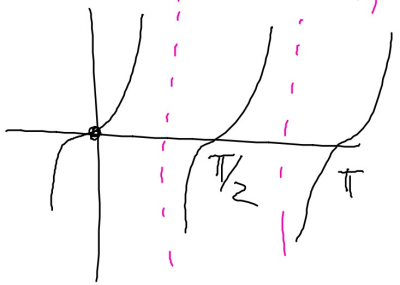
What is the period?

$\frac{\pi}{2}$

Find three VA and three x-int.

X-int $0, \pi/2, \pi$,

VA: $\pi/4, 3\pi/4, 5\pi/4$,



$y = \tan\frac{4\theta}{3}$

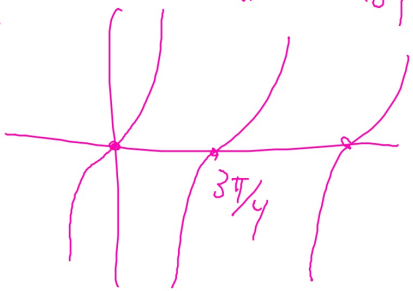
What is the period?

$\frac{3\pi}{4}$

Find three VA and three x-int.

X-int $, 0, 3\pi/4, 3\pi/2,$

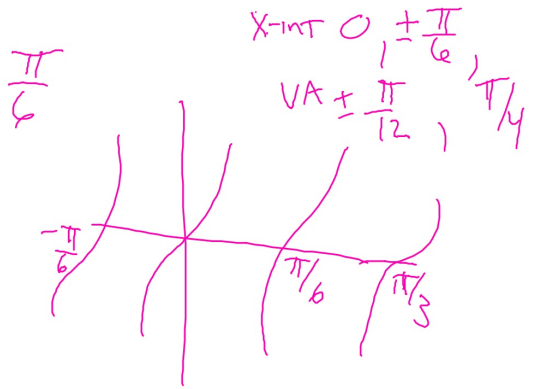
VA $3\pi/8, 9\pi/8, 15\pi/8,$



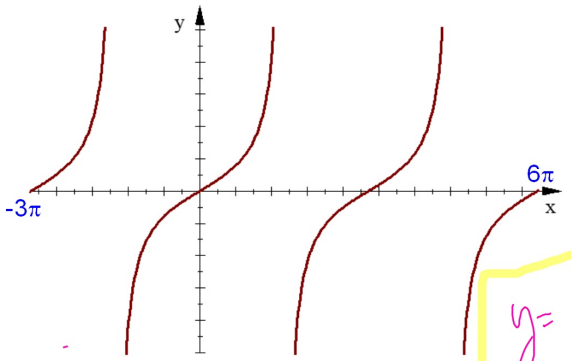
$y = \text{Tan}6x$

What is the period?

Find three VA and three x-int.



Write the equation of this Tangent Function

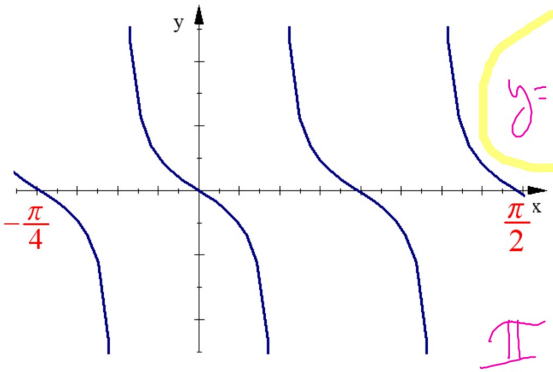


period = 3π

$b = \frac{\pi}{3\pi} = \frac{1}{3}$

$y = \text{Tan}\frac{x}{3}$

Write the equation of this Tangent Function

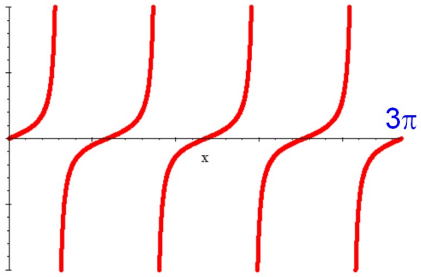


$y = -\text{Tan}4x$

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

$b =$

Write the equation of this Tangent Function



$y = \text{Tan}\frac{4x}{3}$

$\text{period} = \frac{3\pi}{4}$

$b = \pi \cdot \frac{4}{3\pi}$

Hwk #19

Sec 13-6

Pages 752-753

Problems 9-12, 39-40