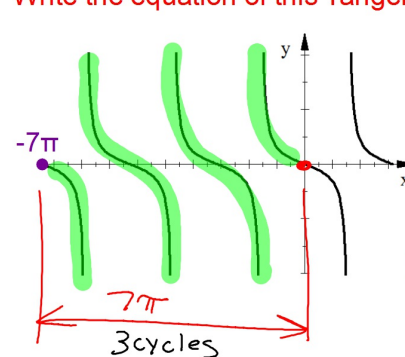


b: The period of $\tan bx = \frac{\pi}{b}$

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

The period of any periodic function is the width of one cycle, or, the distance between two x-coordinates divided by the number of cycles between those two points.

Write the equation of this Tangent Function



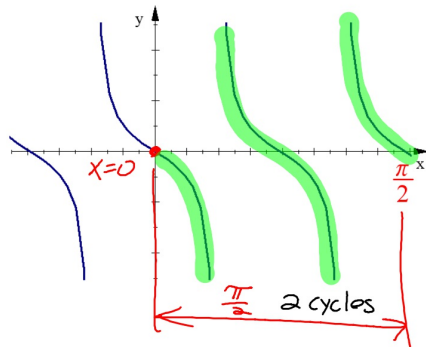
$$\text{period} = \frac{7\pi}{3}$$

$$b = \frac{\pi}{\frac{7\pi}{3}} = \pi \cdot \frac{3}{7\pi} = \frac{3}{7}$$

$$y = -\tan \frac{3x}{7}$$

cycles move down & to the right:
NEG TAN

Write the equation of this Tangent Function



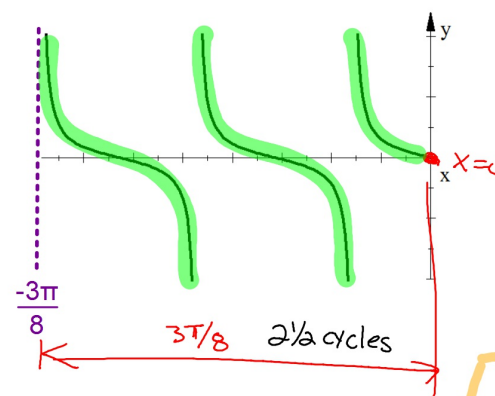
$$\text{period} = \frac{\pi}{2} = \frac{\pi}{2} \cdot \frac{1}{2} = \frac{\pi}{4}$$

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

$$y = -\tan 4x$$

cycles move down & to the right:
NEG TAN

Write the equation of this Tangent Function



$$\text{period} = \frac{3\pi}{8} = \frac{3\pi}{8} \cdot \frac{2}{2} = \frac{3\pi}{4}$$

$$= \frac{3\pi}{8} \cdot \frac{2}{5} = \frac{3\pi}{20}$$

$$b = \frac{\pi}{\frac{3\pi}{20}} = \pi \cdot \frac{20}{3\pi} = \frac{20}{3}$$

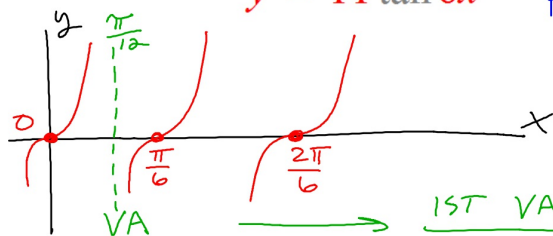
$$y = -\tan \frac{20x}{3}$$

cycles move down & to the right:
NEG TAN.

Find three VA and three x-intercepts for this Tangent Function:

$$y = 11 \tan 6x \quad \text{period} = \frac{\pi}{6}$$

This is the distance from one x-int to the next or from one VA to the next.



1st x-int = 0

2nd x-int = $0 + \frac{\pi}{6} = \frac{\pi}{6}$

3rd x-int = $\frac{\pi}{6} + \frac{\pi}{6} = \frac{2\pi}{6}$

1st VA: Halfway between 0 & $\frac{\pi}{6} = \frac{0 + \frac{\pi}{6}}{2} = \frac{\pi}{6} \cdot \frac{1}{2} = \frac{\pi}{12}$

2nd VA

$$\frac{\pi}{12} + \frac{\pi}{6} = \frac{\pi}{12} + \frac{2\pi}{12} = \frac{3\pi}{12}$$

3rd VA

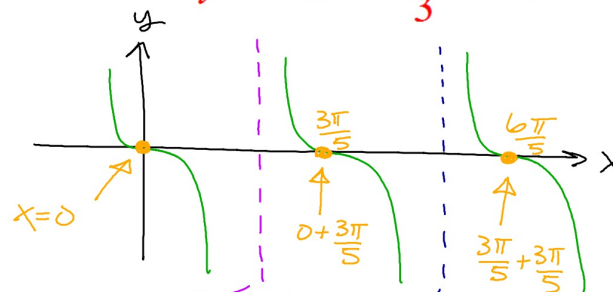
$$\frac{3\pi}{12} + \frac{2\pi}{12} = \frac{5\pi}{12}$$

x-int: $x = 0, \pm \frac{\pi}{6}, \pm \frac{2\pi}{6}, \dots$

VA: $x = \pm \frac{\pi}{12}, \pm \frac{3\pi}{12}, \pm \frac{5\pi}{12}, \dots$

Find three VA and three x-intercepts for this Tangent Function:

$$y = -2 \tan \frac{5x}{3} \quad \text{period} = \frac{\pi}{\frac{5}{3}} = \pi \cdot \frac{3}{5} = \frac{3\pi}{5}$$



1st VA: $0 + \frac{3\pi}{5} = \frac{3\pi}{5} \cdot \frac{1}{2} = \frac{3\pi}{10}$

x-int: $0, \pm \frac{3\pi}{5}, \pm \frac{6\pi}{5}, \dots$

VA: $x = \pm \frac{3\pi}{10}, \pm \frac{9\pi}{10}, \pm \frac{15\pi}{10}, \dots$

to find more VA add the period ($\frac{3\pi}{5}$) to the previous VA

2nd VA = $\frac{3\pi}{10} + \frac{3\pi}{5} = \frac{3\pi}{10} + \frac{6\pi}{10} = \frac{9\pi}{10}$

You can now complete Homework #22

Sec 13-6

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Problems 9,10, 12, 13, 23,24, 39,40

Find the period,
3 VA, and 3 x-int

Just find the period

**Due Tuesday,
May 7, 2019**