PC 12 Session 17

March 6, 2022 2:02 PM

Pre-Calculus 12 Session 17
Tuesday, March 8, 2022

1. Last Day's Homework:
   - Textbook Practice: Section 5.2: pages 250-255, Practise 2 to 7, 10, 14, 15a), c), 16a), c).
   - Readings: Nothing new.
   - Hand-in Assignments and other things: The Chapter 5 Hand-in Assignment may be due on Thursday, March 10. (but I doubt it)
2. Return of, and Comments on, the Chapter 4 Hand-in Assignment test
3. More about Section 5.3: The Tangent Function and the arithmetic error I made last day
4. Section 5.4: Equations and Graphs of Trig Functions (a.k.a. solving Trig Equations by Graphing and Applications of Trig Functions)
5. Section 6.1: Reciprocal, Quotient and Pythagorean Identities
6. Section 6.2: Sum, Difference and Double Angle Identities

Homework: This depends on how far we get today.

Readings: Section 6.1 (pages 290 to 296), Section 6.2 (pages 300 to 305), Section 6.3 (pages 309 to 313), Section 6.4 (pages 316 to 320).

Practice from Textbook to try:

Section 5.3: pages 262 to 265, Practise 1a), c), 2a), c), e), 3, 7, 8
Section 5.4: pages 275-279, Practise 1, 2, 3, 4a), c), 5a), c), 6, 8b), 9, 10, 14, 16, 19.
The Chapter 5 Review (pages 282-285), the Chapter 5 Practice Test (pages 286 and 287).
Section 6.1: pages 296-298, Practise 1a), c), 3, 4, 5, 6, 10, 11, 14, 15, 16.
Section 6.2: 1a), d), e), 2a), c), 4a), c), e), 8a), c), e), 9, 10, 11a), b), 16, 17, 19a), 20a), c).

Hand-in Assignments: You should ~~start~~ continue working on the Chapter 5 Hand-in Assignment. That assignment will likely be due on Thursday, March 10.

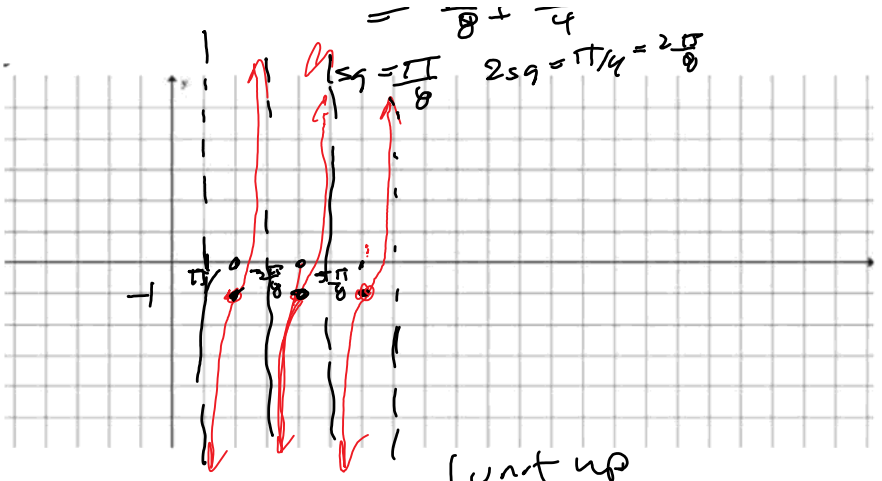
There are no classes on Tuesday, March 15, Thursday, March 17, Tuesday, March 22 and Thursday, March 24.

Graph $y = \tan 4x - 1$.
HC by $\frac{1}{4}$ VT of down 1

Asymptotes

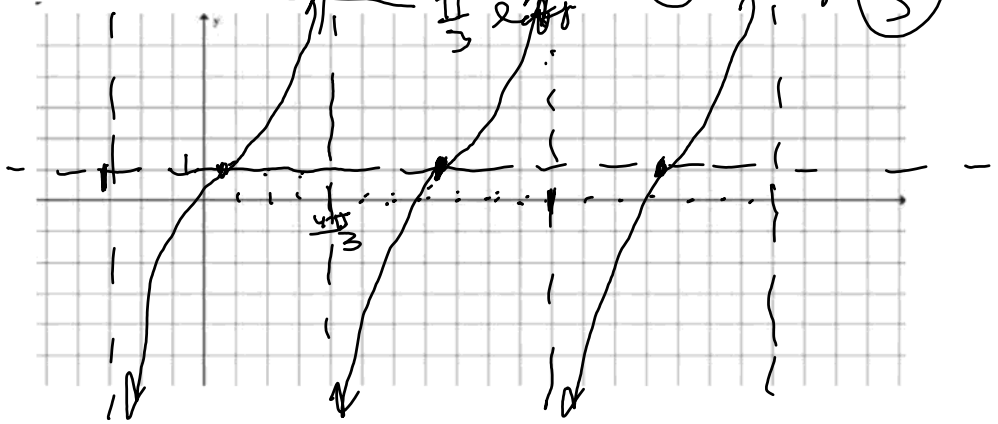
$x = \frac{\pi}{2} + n\pi \rightarrow x = \frac{1}{4}\left(\frac{\pi}{2} + n\pi\right)$
$= \frac{\pi}{8} + \frac{n\pi}{4}$

$\frac{1}{4}$ sq $= \frac{\pi}{16}$ 2 sq $= \pi/4 = \frac{2\pi}{8}$



$y = \tan\left(\frac{1}{2}x - \frac{\pi}{6}\right) + 1$ (1 unit up, HE by factor 2)

$= \tan\left(\frac{1}{2}\left(x - \frac{\pi}{3}\right)\right) + 1$ (HE by 2, $\frac{\pi}{3}$ right)



asymptotes

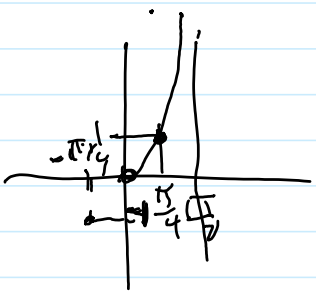
$x = \frac{\pi}{2} + n\pi \longrightarrow 2\left[\frac{\pi}{2} + n\pi\right] + \frac{\pi}{3}$

$(\pi + 2n\pi) + \frac{\pi}{3}$

$\left(\pi + \frac{\pi}{3} + (2n\pi + \frac{\pi}{3})\right.$

$2\pi n + \frac{\pi}{3}$

$\left(\frac{4\pi}{3}\right.$ $\frac{6\pi}{3} n + \frac{\pi}{3} = \frac{7\pi}{3} n.$



You could use the key points

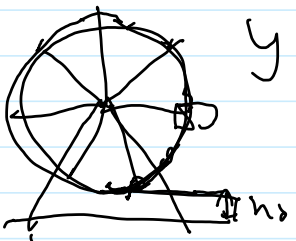
θ	$\tan\theta$
0	0
$\frac{\pi}{4}$	1
$-\frac{\pi}{4}$	-1

x	y
θ	$\tan\theta$
0	0
$\frac{\pi}{2}$	1
$-\frac{\pi}{2}$	-1

x	y
$0 + \frac{\pi}{3}$	1
$\frac{\pi}{2} + \frac{\pi}{3}$	2
$\frac{\pi}{2} + \frac{\pi}{3}$	0

Eventually in this section we will look at applications of trig functions.

Ferris wheel



period = 30 minutes

Most of the application functions we will look at will have rational periods.

$y = a \sin b(x-c)+d$

$\text{period} = \frac{2\pi}{b}$

$y = a \sin \frac{2\pi}{p}(x-c)+d$

period = p (which will be rational)

$y = a \sin \frac{2\pi}{30}(x-c)+d$

$p = 30.$

$y = a \cos b(x-c)+d$

$\text{period} = \frac{2\pi}{b} \qquad p = \frac{360^\circ}{b}$

$y = a \cos \frac{2\pi}{p}(x-c)+d$

period = p.

$y = a \tan b(x-c)+d$

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

$y = a \tan \frac{\pi}{p}(x-c)+d$

period = p.