

PERIOD 3

Deepak, Arvin
Meegada, Kaavya
Lobo, Rachel
Lin, Gene
Mukhi, Simran

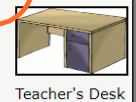
Batra, Kush
Costandy, Clara
Patel, Mayur
Mendiratta, Rishi

Urschel, Nickolas
Pusung, Christopher
Nasralla, Timothy
Famiglietti, John

Fitzgerald, Mary
Kowalski, Grace
Jagasia, Sarisha
He, Deefah

Jeong, Grace
Tan, Ichung
Yang, Angela
Yen, Nicole

Patel, Shivang
Wijesinghe, Dharma
Rea, Jason
Huang, Jacky



Teacher's Desk

DOOR

SMARTBOARD

PERIOD 4

Aftab, Saad
Chan, Bryan
Ghattas, Veronia
Desai, Divya
Yuen, Andrew
Banyamin, David
Avadhani, Neha
Faltas, Marc
Balabaev, Nicole
Chen, Ivy

Karczmit, Philip
Formento, Juliana
Kriegsman, Samuel
Mehta, Ria

Pelaez, Antonio
Samy, Ameer
Rosen, Ethan
Mukhi, Sia

Milewski, Sebastian
Ahn, Jean (Hannah)
Gambourg, Anne
Bhattacharya, Anisha
Chauri, Arshita
Chace, Emma

Pescasio, Mikaela
Tam, Brianna
Rollman, Rebecca
Zhang, Eileen



Teacher's Desk

DOOR

SMARTBOARD

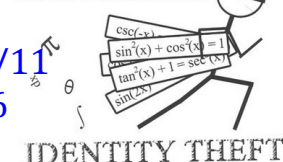
2.3 day 2 - Derivatives of Trig Functions

10/8/18

Homework:

- Section 2.3B
- Formula Quiz - Thursday, 10/11
- Quiz 2.1-2.4 - Tuesday, 10/16

PROTECT YOURSELF FROM...



IDENTITY THEFT

created by: David Edwards 3.14.2013

Objective: Find the derivative of a trig function.Do Now:

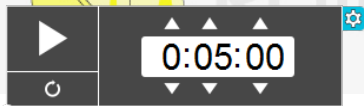
Get into your groups and go to a board...

Find the derivatives I assign your group using
the Product or Quotient Rule.



1. $f(x) = \cot(x)$ $f(x) = \sec(x)$

2. $f(x) = \tan(x)$ $f(x) = \csc(x)$



$$\frac{d}{dx} \sin(x) = \cos x$$

$$\frac{d}{dx} \cos(x) = -\sin x$$

$$\frac{d}{dx} \tan(x) = \sec^2 x$$

$$\frac{d}{dx} \cot(x) = -\csc^2 x$$

$$\frac{d}{dx} \sec(x) = \tan x \sec x$$

$$\frac{d}{dx} \csc(x) = -\cot x \csc x$$



~~Sec Sec Tan~~
 Sec Sec Tan
 ← →
 Csc - Csc Cot
 ← →



Homework Questions:



$$h(x) = \frac{\sqrt[3]{x}}{x^3+1} = \frac{x^{1/3}}{x^3+1}$$

$$h'(x) = \frac{\frac{1}{3}x^{-2/3}(x^3+1) - x^{1/3}(3x^2)}{(x^3+1)^2} \cdot \frac{3x^{2/3}}{3x^{2/3}}$$



$$= \frac{x^3+1-9x^3}{3x^{2/3}} \cdot \frac{1}{(x^3+1)^2}$$

$$= \frac{1-8x^3}{3x^{2/3}(x^3+1)^2}$$

Find the derivative of the following:

$$1. f(x) = \overset{f}{\tan}(x) \cdot \overset{g}{(x-5)} \quad p' = f'g + g'f$$

$$f'(x) = \overset{f'}{\sec^2}x \cdot \overset{g}{(x-5)} + \overset{f}{\tan}x \cdot \overset{g'}{1}$$




Rain

Write the equation of the tangent line that passes through $x = \pi/4$.

$$2. f(x) = \frac{\sin x}{\sin x + \cos x} \quad \left(\frac{\pi}{4}, \frac{1}{2}\right)$$

$$f'(x) = \frac{\cos x(\sin x + \cos x) - \sin x(\cos x - \sin x)}{(\sin x + \cos x)^2} \quad m = f'(\pi/4)$$

$$f'(\pi/4) = \frac{\frac{1}{\sqrt{2}}}{\frac{2}{\sqrt{2}}} = \frac{1}{2}$$

$$f'(x) = \frac{\cancel{\cos x \sin x} + \cos^2 x - \cancel{\cos x \sin x} + \sin^2 x}{(\sin x + \cos x)^2}$$


$$= \frac{\cos^2 x + \sin^2 x}{(\sin x + \cos x)^2} = \frac{1}{(\sin x + \cos x)^2}$$

$$= \frac{1}{\sin^2 x + 2\sin x \cos x + \cos^2 x}$$

$$= \frac{1}{1 + 2\sin x \cos x} = \frac{1}{1 + \sin(2x)}$$

$$f'(\pi/4) = \frac{1}{1+1} = \frac{1}{2} \quad \left(\frac{\pi}{4}, \frac{1}{2}\right)$$

$$\boxed{y - \frac{1}{2} = \frac{1}{2}\left(x - \frac{\pi}{4}\right)}$$


Find the derivative and simplify completely:

Hint: Try simplifying first!

3.

$$f(x) = \frac{\sin(x) \sec(x)}{1 + x \tan(x)} = \frac{\sin x \cdot \frac{1}{\cos x}}{1 + x \tan x} = \frac{\tan x}{1 + x \tan x}$$

$$f'(x) = \frac{\sec^2 x (1 + x \tan x) - \tan x (\tan x + x \sec^2 x)}{(1 + x \tan x)^2}$$



$$f'(x) = \frac{\sec^2 x + \cancel{x \sec^2 x \tan x} - \tan^2 x - \cancel{x \sec^2 x \tan x}}{(1 + x \tan x)^2}$$

$$= \frac{\sec^2 x - \tan^2 x}{(1 + x \tan x)^2} = \frac{1}{(1 + x \tan x)^2}$$

Find the derivative and simplify completely:

$$4. f(x) = \frac{\cot(x)}{1 + \csc(x)}$$

$$f'(x) = \frac{-\csc^2 x (1 + \csc x) + \cot x (\csc x \cot x)}{(1 + \csc x)^2}$$



Rain

5. Find y'' given $y = x \sin(x) - 3 \cos(x)$.



Rain

5) Let $f(x) = \frac{\cos x}{\cos x - 2}$ for $-2\pi \leq x \leq 2\pi$.

(a) Sketch a graph of f in the window $[-2\pi, 2\pi]$ by $[-2, 2]$.

(b) Find $f'(x)$.



(c) Find all values in the domain for which $f'(x) = 0$.



(d) Use information obtained from parts (a) and (c) to find the range of f .

Closure

What should your first step be in finding the derivative of this function?

$$f(x) = \left(\frac{x+1}{x+2} \right) (2x-5)$$



Rain

How many do you remember?

$$\frac{d}{dx} \sin(x) =$$

$$\frac{d}{dx} \cos(x) =$$

$$\frac{d}{dx} \tan(x) =$$

$$\frac{d}{dx} \cot(x) =$$

$$\frac{d}{dx} \sec(x) =$$

$$\frac{d}{dx} \csc(x) =$$



Rain