

Name:

Date:

4 – 5.5 The Derivative of $y = \tan x$ and the Reciprocal Functions

Lesson Goals:

- Be able to determine the derivative of a function containing trigonometric operations

1) Derivative of $y = \tan x$

- Proof by the Quotient Rule $h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$

- If $y = \tan(f(x))$, then $\frac{dy}{dx} = \sec^2(f(x)) \times f'(x)$.

Example 1: Differentiate.

a) $y = \tan 2x$

b) $y = \tan(7x^3 - 5x)$

c) $y = \tan^2(\sin x)$

2) Derivative of Reciprocal Functions

Example 2: Rewrite each function using an identity with sine and/or cosine then determine $\frac{dy}{dx}$.

a) $y = \sec x$

b) $y = \csc x$

c) $y = \cot x$

Homework: Page 260 #1-11 (pick and choose) and Worksheet