

**Calculus Class Worksheet #3 Unit 6 \_\_\_\_\_**

**Find  $f'(x)$  for each of the following functions.**

1.  $f(x) = x^3 \tan(x)$

2.  $f(x) = \sin(x) \cos(x)$

3.  $f(x) = \frac{x^2}{\cos(x)}$

4.  $f(x) = \frac{\sec(x)}{1 - 3x}$

**Find  $f'(x)$  and  $f''(x)$  for each of the following functions.**

5.  $f(x) = \cos(2x)$

6.  $f(x) = \sec(x)$

7.  $f(x) = \cot(-3x)$

8.  $f(x) = \sin(3x^2)$

**Find  $dy/dx$  for each of the following. (Use implicit differentiation.)**

9.  $\sin(x) - \cos(y) = 3x$

10.  $\cos(x - y) = x^2$

11.  $\sec(xy) = x^3$

12.  $\cot(x^2y) = x - 2$