

## MAT 136 (Calculus I), Prof. Jim Swift

Worksheet on the product and quotient rule

Differentiate the following functions. Use a complete sentence for each answer. You do *not* need to simplify unless instructed to do so.

1.  $f(x) = (x^2 + 3x + 1)(x^3 - 2x + 1)$ . Do not simplify the derivative.

2.  $y = x(e^x - x^2)$

3.  $h(x) = \frac{x}{x^2 + 2}$ . Simplify the numerator.

4.  $f(x) = e^{2x} = e^x \cdot e^x$ . Hint: Use the product rule.

5.  $g(x) = e^{-x} = \frac{1}{e^x}$ . Hint: Use the quotient rule.