Discussion Problems **Name:** _____

Worksheet 5: Product Rule and Differentiation

Math 408C:

Instructor: Athil George

Problem 1. Suppose you have a function f(x), g(x), and h(x), where h(x) is the product of f and g. You also know that the function f at x=2, its derivative and value is 7 and 4, respectively. You also know that g(x) is f(x) reflected over the x-axis, or f(x)=-g(x). What is derivative of h at x=2, or h'(2)?

Problem 2. Consider the function $f(x) = ax^2$. Find a so that the tangent line $y = 2x + 1$ exists on f(x).

Problem 3. A tangent line is drawn to the hyperbola $x^2y = c$ for all $x \geq 0$. Show that the triangle formed by this tangent line and the coordinate axes are the same for all tangent lines.