Math 251 Fall 2017

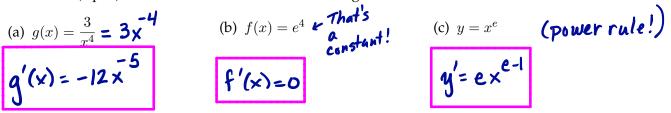
Quiz #4, October 3rd

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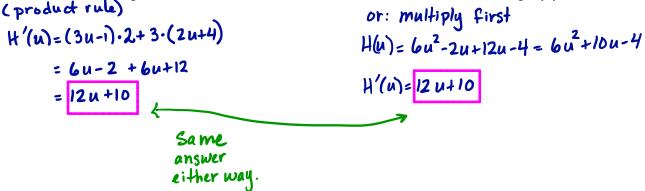
Name: Solutions

There are 25 points possible on this quiz. This is a closed book quiz. Calculators and notes are not allowed. **Please show all of your work!** If you have any questions, please raise your hand.

Exercise 1. (5 pts.) Find the derivatives of the following functions.



*Exercise* 2. (3 pts.) Differentiate the function H(u) = (3u - 1)(2u + 4). Simplify your derivative.



Exercise 3. (4 pts.) Differentiate the function  $y = \frac{1-6x+x^2}{\sqrt{x}}$ . Simplify your derivative.  $\underbrace{Simplify \ y \ first}_{y = x^2 - 6x^2 + x^2}_{y = -\frac{1}{2}x^{-\frac{3}{2}} - 3x^{-\frac{1}{2}} + \frac{3}{2}x^2}_{z = -\frac{1}{2}x^{-\frac{3}{2}} - 3x^{-\frac{1}{2}} + \frac{3}{2}x^2}$  *Exercise* 4. (5 pts.) Where is the tangent line to  $y = e^x - 2x + 1$  parallel to 4x - y = 1?

Exercise 5. (4 pts.) Find the derivative of  $G(x) = \frac{2x+5}{x^2+1}$ . Simplify your derivative. **quotient rul**   $G' = (x^2+1)(z) - (2x+5)(2x) = \frac{2x^2+2-(4x^2+10x)}{(x^2+1)^2} = \frac{2x^2+2-4x^2-10x}{(x^2+1)^2}$  $= -\frac{2x^2-10x+2}{(x^2+1)^2} = \frac{-2(x^2+5x-1)}{(x^2+1)^2}$ 

*Exercise* 6. (4 pts.) Find the derivative of  $f(x) = 2xe^x$ . Simplify your derivative.

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