

Name: _____ / 25

There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. Show all work for full credit.

1. [9 points] For each function below, find its derivative. You do not need to simplify your answer.

a. $f(x) = \sqrt{5x} + x^e + \frac{5}{3x^2}$

b. $g(x) = \frac{x+1}{x^2+2}$

c. $h(x) = x^{-2/3}e^x$

2. [4 points] For what x -values does $f(x) = ax^3 - bx + c$ have a horizontal tangent? (Assume a , b , and c are positive real numbers.)

3. [8 points] Suppose that $f(2) = 10$, $f'(2) = 3$, $g(2) = -1$, and $g'(2) = 4$. Find the following values:

a. $(f + g)'(2) =$

b. $(6f - g)'(2) =$

c. $(fg)'(2) =$

d. $(\frac{f}{g})'(2) =$

4. [4 points] Find an equation of the tangent line to the curve $y = 7x - \frac{2}{x}$ when $x = 1$.