

Name: _____

Quiz 5 (Version A)

Instructions: This quiz is closed book, closed note, and an individual effort. Electronic devices other than approved calculators are not allowed on your person (e.g., no cell phones or calculators with CAS). Answer each question. **Show all work to receive full credit.** Unless the question specifies, you may provide either an exact answer or round to two decimal places. If you get stuck, please attempt to explain what you want to do. This may give more partial credit.

1. (2 points each) Find the derivative, $f'(x)$, of the following functions. Write the name of the rules you used.

(a) $f(x) = (2x + 1)^2$

(b) $f(x) = \frac{x^2+1}{3x-1}$

(c) $f(x) = x^2e^x$

(d) $f(x) = e^{x^2} \cdot \ln(x^2)$

(e) $f(x) = \exp(e^{x^2})$ (Hint: $\exp(u) = e^u$)

2. (4 points) Let $f(1) = 4$, $f'(1) = 9$, and $g(x) = \ln(f(x))$. Find $g'(1)$.

3. (6 points) Let $h(x) = g(x)f(x)$ and $k(x) = \frac{f(x)}{g(x)}$. Also let $g'(1) = f'(1) = 2$, $g(1) = -2$, and $f(1) = 3$. Find $h'(1)$ and $k'(1)$.