Math 131 - Quiz 5

Name _____

September 24, 2025

Score _____

Show all work to receive credit. Supply explanations where necessary.

1. (6 points) Let $f(x) = 3x^2 - x$. Use the limit definition of the derivative to determine $f'(x)$.

2. (2 points) Use your result from above to find an equation of the line tangent to the graph of $f(x) = 3x^2 - x$ at the point where $x = 2$.

3. (2 points) Explain why this function is not differentiable at $x = 1$.

$$f(x) = \begin{cases} 3x + 5, & x \leq 1 \\ x^2 + 1, & x > 1 \end{cases}$$