

Math 131 - Quiz 5

September 25, 2025

Name _____

Score _____

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

1. (2 points) State two ways in which a function can fail to be differentiable at a point.

2. (4 points) Let $f(x) = x^2 + x$. Use the limit definition of the derivative to determine $f'(x)$.

3. (4 points) Use differentiation rules to determine each derivative. Do not simplify.

(a) $\frac{d}{dx} (2x^2 \cos x)$

(b) $\frac{d}{dx} \left(\sqrt{x} + \frac{1}{x^2} + 1 \right)$