Math 131 - Quiz 5

Name _____

February 25, 2026

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) Each function below is differentiable everywhere except for at a single point. Say where and how each function fails to be differentiable.

   (a) $f(x) = |x|$

   (b) $g(x) = \sqrt[3]{x}$

2. (3 points) Determine each derivative.

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

   (b) $\dfrac{d}{dx}(4x^3 \cos x)$

3. (3 points) Find an equation of the line tangent to the graph of $f(x) = 5x^2 - 8x + 3$ at the point where $x = 2$.