

Math 131 - Quiz 9

April 8, 2026

Name _____

Score _____

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

1. (3 points) Use logarithmic differentiation to find dy/dx when $y = x^{x^2}$.

2. (4 points) Determine each derivative.

(a) $\frac{d}{dx} \log_2(5x^2 + \sin x)$

(b) $\frac{d}{dx} 5^{3x}$

3. (3 points) Find the linearization of $f(x) = \sqrt[3]{x}$ at $x = 8$. Then use your linearization to approximate $\sqrt[3]{8.1}$.