

Math 131 - Quiz 4

February 17, 2022

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary. This quiz is due February 24.

1. (4 points) Let $f(x) = x^2 - x + 3$.

(a) Use the limit definition of the derivative to determine $f'(x)$.

(b) Use our basic differentiation rules to determine $f'(x)$.

(c) Find an equation of the line tangent to the graph of f at the point where $x = 2$.

2. (2 points) Let $g(x) = \sqrt{2x}$. Use the limit definition of the derivative to determine $g'(x)$.

3. (3 points) Use our basic differentiation rules to determine each derivative.

(a) $\frac{d}{dx} (x^{1/2} + 2x^{1/3} - 3x^{7/5})$

(b) $\frac{d}{dx} \left(4 \cos x - 10 \sin x + \frac{1}{x} \right)$

4. (1 point) Sketch the graph of a function that is continuous at $x = 2$, but not differentiable at $x = 2$.