

Name _____

- No calculators allowed.
 - Show sufficient work to justify each answer.
 - You have 15 minutes for this quiz.
1. (2 points each) Using Leibniz notation (i.e., $\frac{dy}{dx}$, $\frac{dP}{dt}$, etc.), find derivatives for each of the following functions. Simplify each answer as much as possible.

(a) $w = 3t^5 - \frac{1}{3t^5}$

(b) $H = 3e^x + 2e^\pi - \ln 5$

(c) $y = \left(\frac{\sqrt{x}}{\sqrt[3]{x}}\right)^{12}$

2. (2 points) Determine a derivative for the given function. Do not simplify your answer.

$$f(x) = \frac{10x^2 - 6x + 4}{x^3 + 5}$$

3. (2 points) Find the x -value for each point on the graph of $f(x) = x^3 - 11x + 62$ where the line tangent to the curve has a slope of 4.