

Name _____

- No calculators allowed.
- Show sufficient work to justify each answer.
- You have 15 minutes for this quiz.

1. (4 points) Find the x -value for each point on the graph of $f(x) = x^3 + x^2 + 4x$ where the line tangent to the curve is parallel to the line $y = 5x + 7$.

2. (2 points each) Using Leibniz notation (i.e., $\frac{dy}{dx}$, $\frac{dP}{dt}$, etc.), find derivatives for each of the following functions. For part (b) simplify your answer.

(a) $q = 5e^r + \ln 3$

(b) $w = \left(\frac{1}{x\sqrt[3]{x^2}}\right)^6$

(c) $y = \frac{2}{t^6 + 3}$