(6.) (6 points) Let \( f(x) = x^3 \). Use the \textbf{definition} of the derivative to express \( f'(2) \) as a limit. You do not need to simplify your expression or try to estimate \( f'(2) \).

(7.) (8 points) Suppose \( g \) is a differentiable function that satisfies the following three properties:

1. \( g \) is concave up.
2. \( g(1) = 9 \).
3. \( g(5) = 3 \).

(a) What is the average rate of change of \( g \) on the interval \([1, 5]\)?

(b) Which is larger, \( g'(2) \) or \( g'(4) \)? Explain.

(c) What is the maximum possible value for \( g(3) \)? (Hint: try sketching a graph of \( g \).) Explain your reasoning.