

Quiz 08
Math 140: Calculus I
Week 8

Instructions. No notes, books, or calculators. Show all work clearly. Answers without supporting work may receive little or no credit.

1. Use a linear approximation to estimate $\sqrt{9.2}$.

2. (Rolle's Theorem)
 - (a) State Rolle's Theorem.
 - (b) Draw a graph of a function that satisfies the hypotheses of Rolle's Theorem on an interval $[a, b]$. Clearly label the point c guaranteed by the theorem.
 - (c) Briefly explain, in geometric terms, what the theorem guarantees.

3. (Mean Value Theorem)
 - (a) State the Mean Value Theorem.
 - (b) Sketch a graph of a function on $[a, b]$ and illustrate geometrically what the Mean Value Theorem guarantees.
 - (c) Briefly explain, in geometric terms, what the theorem guarantees.

4. Let $f(x) = x^3 - 6x^2 + 9x$.
 - (a) Find all critical numbers of f .
 - (b) Use the First Derivative Test to classify each critical point.