

Math 560
Fall 2005
Homework 9
Assigned Monday, 7 November, 2005

1. (#3, Page 123) If f is defined and f' exists for all $x \in (a, b)$ show that f is continuous on (a, b)
2. (#8, Page 123) Suppose that f is such that $|f(a) - f(b)| \leq M |a - b|^2$ for all $a, b \in \mathbb{R}$. Prove that f is a constant function.
3. (#11, Page 123)
4. (#14, Page 124) If $f(x) > 0$ and $f''(x) \leq 0$ for $x > 0$ show that $f'(x) \geq x$ for $x > 0$. Does it follow that $\lim_{x \rightarrow \infty} f(x) = \infty$?