Math 320, Fall 2007, Homework Set 11
(due on Friday November 30 2007)

Instructions

- **This is the last homework set of the semester. If you need the homework assignment to study for the final, you should make a copy of your solution before submitting it for grading on Friday.**
- **Once the homework has been graded, the papers will be kept in a box outside the instructor's office until January 6. You can collect your paper at your convenience.**
- You are encouraged to discuss homework problems among yourselves. Also feel free to ask the instructor for hints and clarifications. However the written solutions that you submit should be entirely your own.
- Answers should be clear, legible, and in complete English sentences. If you need to use results other than the ones discussed in class, provide self-contained proofs.

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1. Suppose $f : \mathbb{R} \to \mathbb{R}$ is differentiable and $f'(x) \to 0$ as $|x| \to \infty$. Is f uniformly continuous?
2. Does there exist a thrice differentiable function $f : \mathbb{R} \to \mathbb{R}$ with $|f(1) - f(-1)| = 1$ and $f'(0) = 1$ such that $|f^{(3)}(t)| < 3$ for all $t \in (-1, 1)$.
3. Problems 26 and 27, page 119 of the textbook.
4. Problem 7, page 78 of the textbook.
5. Problem 10, page 79 of the textbook.
6. Problem 11, page 79 of the textbook.