Calculus I MA113:10-12 Week 3

- Recall that Homework A, §1.3 #6, 78 is due on Wednesday, 29 January 2003. Time will be provided in recitation to work on this problem.
- The quiz on Thursday, 30 January 2003, will cover §1.3 and §1.5 up to problem 33.
- I seem to have neglected to give a homework assignment over section 1.4. If you would like something to work on, consider $\S1.4 \#3.4$ and 11-14. These problems will not be covered on the examination.
- Homework B will be due on Wednesday, 36 January 2003. For this homework, I would like to you to 1. State the internediate value theorem. 2. Use the intermediate value theorem to show that $x^4 7x^2 + 10 = 0$ has a root.

Please write your answers in complete sentences.

- The following two puzzles were inspired by questions asked in class on Friday. You may find them interesting to think about. You should not hand in your answers, but feel free to ask me or your TA about these questions.
 - Is it possible for

$$f(x) < g(x), \text{ if } x \neq 0 \quad \text{and} \quad \lim_{x \to 0} f(x) = \lim_{x \to 0} g(x)$$

to both be true?

- Here is an attempt to answer the question from class about $\infty - \infty$. If $f(x) = \frac{1}{x^2}$ and $g(x) = -\frac{1}{x^2} + 3$, then

$$\lim_{x \to 0} f(x) = \infty \quad \text{and} \quad \lim_{x \to 0} g(x) = -\infty.$$

Find

$$\lim_{x \to 0} (f(x) + g(x))?$$

Does this mean that $\infty - \infty = 3$?