Math 111.17 Fall 2002
Assignment #7

This assignment is due at the beginning of class on **Tuesday, October 22, 2002**. You are encouraged to form study groups and collaborate with others on this assignment. However, the final work you submit must be your own. You must submit all problems that are marked with an asterix (*). YOUR ASSIGNMENT MUST BE STAPLED AND PROBLEM NUMBERS CLEARLY LABELLED. UNSTAPLED ASSIGNMENTS WILL NOT BE ACCEPTED!

1. Practice problems.

• Section 2.9 #3, 5, 13 • Section 3.8 #1, 5, 19

2. * Problems to hand in.

• Section 2.9 #6, 12 • Section 3.8 #2, 16, 20, 22

3. * Suppose that the function $f(x)$ satisfies

$$f(2) = 4 \quad \text{and} \quad f'(2) = -1.$$

Find the best linear (tangent line) approximation you can for the value of $f(3)$.

4. * As you know, if $a > 0$, then

$$\frac{d}{dx}a^x = a^x \ln a \quad \text{and} \quad \frac{d}{dx}x^a = ax^{a-1}.$$

However, the function x^x is ***neither*** a power function nor a polynomial, so neither of the above formulae is applicable. Compute

$$\frac{d}{dx}x^x.$$