

Math 111.17 Fall 2002
Assignment #10

This assignment is due at the beginning of class on **Tuesday, November 12, 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 4.5 #1, 3, 5, 9, 27, 41
- Section 4.6 #3, 7, 9, 15, 17, 27

2. * Problems to hand in.

- Section 4.5 #4, 10, 14, 34, 44, 54
- Section 4.6 #4, 8, 10, 12, 16, 32

3. * On Assignment 5 you investigated $\lim_{x \rightarrow 0} (\sec x)^{1/x^2}$. Carefully show that the true value of this limit is

$$\lim_{x \rightarrow 0} (\sec x)^{1/x^2} = \sqrt{e}.$$

4. * Using L'Hôpital's Rule, find

$$\lim_{x \rightarrow a} \left(\frac{\sin x}{\sin a} \right)^{1/(x-a)}$$

where $\sin a \neq 0$.