[10-11-16-T12]

What to expect on Exam 2

■ **The exam will cover Varberg [3.1]-[3.4]**

■ **You are expected to apply the numerous rules for finding deriviatives in a nearly automatic fashion and to be so familiar with the proofs that you can do them quickly.**

■ **Definitions**

You will be expected to state the definition of derivative given at Varberg page 107.

You will be expected to be familiar with equivalent forms for the derivative given at Varberg pages 109-110.

■ **Theorems**

You will be expected to use the following theorems:

[3.2] Theorem A *Differentiability implies continuity*. You must realize that its converse is not generally true.

[2.3] Theorems A-H. These provide several rules for formally finding derivatives. Note that Example 6 page 118 extends the power rule to negative integral exponents.

[3.4] Theorems A and B. Rules for derivatives of trigonometric functions. You must know these by heart.

■ **Things to do**

You may be asked to do any or all of the following.

[1] Use the definition of the derivative to find the derivatives of a variety of functions.

[2] Prove [3.2] Theorem A, *Differentiability implies continuity*.

[3] Prove [3.3] Theorem G, the product rule.

[4] Prove [3.4] Theorem A, the derivative of the sine function.

[5] Give an example of a function that is continuous at a point but not differentiable at that point.

[6] Use [2.3] Theorems A-H and [3.4] Theorems A and B to find the derivatives of various functions.

[7] Solve an application problem (word problem) similar to those we discussed in class.

[8] Reach a conclusion based of a visual inspection of the graph of a function as to its differentiability at a point.