

## MATH 104/184: Week 5 Learning Goals

August 16, 2012

### Learning Goals

We will cover implicit differentiation this week, section 3.7 of Briggs Cochran. We will cover up to and including the power rule for rational exponents on p. 187. We will also begin section 3.8 of Briggs Cochran, which is on the derivatives of logarithmic and exponential functions. The text approaches this through the inverse function relationships between logarithms and exponentials.

Suggested problems that help build these skills are given as [section: question #s].

The specific learning goals for this week are that by the end of the week and review homework, you should be able to:

1. explain what we mean by *implicit differentiation* and identify situations where they will use it. [3.7: 2,3]
2. carry out computations involving implicit differentiation. [All assigned problems except 2 and 3.]
3. find equations of tangent lines to graphs of implicitly defined functions. [3.7: 23,24,50,52]
4. find equations of normal lines to graphs of implicitly defined functions. [3.7: 62,68]
5. use the implicit differentiation to demonstrate the power rule for rational exponents.
6. work with the inverse properties of  $e^x$  and  $\ln x$ ;
7. use the derivatives of general logarithmic functions in computations;
8. use the derivatives of general exponential functions in computations;

### Suggested Problems

**Suggested Problems:** This week, all suggested problems from the text are:

Chapter 3.7: 2,3,8,10, 14,20, 23,24,47,50,52,54,55,62,68,69.

Chapter 3.8: 1,2,6,10,12,15,36,39,42, 47,50, 79, 87\*.

As well, try problem 24, but replace the point  $(1, 1)$  with the point  $(0,0)$ .