

MATH 104/184: Week 5 Learning Goals

October 5, 2013

Learning Goals

We will cover implicit differentiation, section 3.7 of Briggs Cochran. We will also cover material in this section to the power rule for rational exponents on p. 187. It is not necessary to cover the material on higher derivatives at this point. We also will cover 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 $\ln x$; [3.8: 1, 6]
7. use the derivatives of general logarithmic functions in computations; [3.8: 10, 12, 15, 36, 42]
8. use the derivatives of general exponential functions in computations; [3.8: 12, 79]
9. use the technique of logarithmic differentiation; [3.8: 36, 47, 50, 87]

Suggested Problems and Assignments

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.

As well, try problem 24, but replace the point $(1, 1)$ with the point (0.0) .

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

Webwork Homework: You will be asked to do a WebWork assignment on this material. It will be due Wednesday, October 23rd.