

MATH 104/184: Week 3 Learning Goals

August 16, 2012

Learning Goals

This week we introduce some of the basic rules of differentiation. This is the material in sections 3.2 and 3.3 of Briggs Cochran. We will also introduce derivatives of the basic trigonometric functions, but only as a table of derivatives (Theorem 3.13 in section 3.4).

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. use the power, sum, and constant multiple rules to differentiate, for example, polynomials. [3.2:19–24,28,33,50]
2. use the derivative of an exponential function. [3.2: 38,68,75;3.3:46]
3. know the definition of “ e ” as the base of the exponential function with the property that

$$\frac{d}{dx}(e^x) = e^x.$$

[3.2:75]

4. correctly state and use the product rule. [3.3:7–12,13]
5. correctly state and use the quotient rule. [3.3:21,25,43,72]
6. differentiate given functions using appropriate combinations of the rules of differentiation. [3.3:51,52]
7. find equations of tangent lines to given functions at given points. [3.2:41;3.3:28,62]
8. compute higher-order derivatives. [3.3:77]
9. compute derivatives involving the basic trigonometric functions. [3.4: 6,15 – 22, 34,50,54]

Suggested Problems

This week, all suggested problems from the text are:

Chapter 3.2: 19–24,28, 33, 36,38, 41, 50, 58, and 68, 75*.

Chapter 3.3: 7–12, 13, 21, 25, 28, 43,46,51,52,62, 72,75*,77.

Chapter 3.4: 6,15–22,34,50,54.

(A * indicates a hard problem.)