Homework Assignment for Week 05

Assigned Mar 23, 2011.

1. Section 3.5: As time permits, pick among problems 51-70 and practice until you are fluent with differentiation.

2. Section 3.6: problems 21, 25, 33, 37, 43, 58.

3. The error formula for linear approximation is not mentioned explicitly in the textbook (not until Chap 9, Taylor's Theorem). Just memorize it for now:

$$f(x) - L(x) = \frac{1}{2} f''(\xi)(x - x_0)^2$$

   where ξ lies between x and x_0. As a consequence, we have an error bound

$$|f(x) - L(x)| \le \frac{1}{2} \left(\max_{\xi \text{ between } x \text{ and } x_0} |f''(\xi)| \right) (x - x_0)^2$$

4. Section 3.7: problems 9, 10, 17, 20 (also give an error estimate for (b)), 35, 45, 51.

5. Make sure you understand the meaning of equations (10), (11) on page 184, which is related to the error formula for linear approximation. Then read Appendix 3 (proof of chain rule).

6. Chap 3: problem 90. Do the same for $\frac{1}{1+\sin(2x)}$.