Homework Assignment for Week 4.

Assigned Oct 06, 2005

1. Section 3.5: problems 31-40, 61-70 (if not all of them, at least as many as you can, it helps!).

2. Section 3.6: problems 22, 26, 34, 38, 44, 58.

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

$$f(x) - L(x) = \frac{1}{2} f''(y)(x - x_0)^2 \text{ for some } y \text{ between } x \text{ and } x_0$$

   and as a consequence, we have an error bound

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

4. Section 3.7: problems 9, 10, 16, 17, 20 (also give an error estimate for (b)), 34, 44, 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 $\frac{1}{1+\sin(2x)}$.