

## Homework Assignment for Week 07

1. Section 3.11: problems 9, 11, 17, 63, 64.
2. The error formula for linear approximation  $L(x, x_0)$  (also denoted as  $L(x)$  sometimes) is not mentioned explicitly in the textbook till a later Chapter. Just take it for granted and memorize it for now:

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

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

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

Use this formula to give an estimate on the error of linear approximation for problem 17 (b) of Section 3.11.

3. Chapter 3, additional and advanced problems: problems 21, 23.
4. Section 4.1: problems 27, 35, 39, 59, 77, 93.