Homework Assignment for Week 05

1. Section 3.8: problems 7, 9, 37, 39, 51 (Hint: take ln on both sides first), 65, 77, 89, 91, 98. 93, 95.

2. Section 3.9: problems 21, 23, 25, 33, 35, 39, 55.

3. Start with domain and range for csc and $\csc^{-1}$, derive the formula for the derivative of $\csc^{-1}$.

4. Section 3.11: problems 9, 11, 17, 63, 64.

5. 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).