

Study guide for quiz 05

Quiz problems include both the lecture contents and homework problems.

1. Section 3.11: Study how to find approximate value of functions using linear approximation (linearization) such as $(1+x)^k$ and $(a+x)^k$, $a > 0$, etc. **and how to estimate the error of the linear approximation (memorize the error formula in problem 2 of Homework week 06).**
2. Section 3.11: Study the equivalence relation on page 222-223 of the textbook and its application in the proof of the Chain Rule.
3. Chap 3: Review how to compute $f'(0)$ and $\lim_{x \rightarrow 0} f'(x)$ correctly for the function

$$f(x) = \begin{cases} x^2 \sin(\frac{1}{x}), & x \neq 0, \\ 0, & x = 0. \end{cases}$$

4. Section 4.1: Study the statement and proof of Theorem 2 (The First Derivative Theorem for Local Extreme Values) and how to use it to classify possible locations of local or global minimum or maximum for a continuous function on a closed interval.