Calculus II, Spring 2022 (http://www.math.nthu.edu.tw/~wangwc/)

Thomas' Calculus Early Transcendentals 13ed

Study guide for quiz 01

Quiz problems include both the lecture contents and homework problems.

1. Section 8.8:

   Study how to compute the improper integrals $\int_0^1 x^{-p}dx$ and $\int_1^\infty x^{-p}dx$ for the cases $0 < p < 1$, $p = 1$ and $p > 1$, respectively and memorize the results.

2. Section 8.8:

   Study the comparison Theorems that can be used to decide convergence/divergence of improper integrals.

3. Section 8.8:

   Review how to determine convergence/divergence of an improper integral if it has multiple 'improper' parts such as the domain contains both $x \to \pm\infty$, and/or points of discontinuity within the domain.

4. Section 10.1:

   Study the definition of convergence of a sequence, including the cases of the limit being $\pm\infty$. Review the techniques from limit of functions (Theorem 2-4) and related examples.

5. Section 10.1:

   Compute the examples in Theorem 5 of Section 10.1 and memorize the results.