Study guide for quiz 01

Quiz problems include both the lecture contents and homework problems.

1. Section 8.8:

   Memorize the definitions of type I and type II improper integrals and study how to verify convergence/divergence of improper integrals from these definitions. You may need to review some techniques of integration, such as "integration by parts", etc..

2. Section 8.8:

   Study the convergence/divergence of the improper integrals $\int_a^\infty \frac{1}{x^p}dx$ $(a > 0)$, $\int_0^a \frac{1}{x^p}dx$, $\int_c^{c+a} \frac{1}{(x-c)^p}dx$, and $\int_{c-a}^c \frac{1}{|x-c|^p}dx$ for $p > 1$, $p = 1$ and $0 < p < 1$, respectively by direct computation. Then memorize the results. Plotting the graph of $f(x) = \frac{1}{x^p}$ for various p's as in page 11 of lecture 01 would likely help you memorize the results.