

Guide to Midterm Exam 1

1. Review all your homework problems and quizzes. As usual, the midterm will be more difficult than quiz problems. Your practice and familiarity on the homework problems is basis for the midterm exam.
2. Review basic (but important) functions and comparison Theorems used in determining convergence/divergence of improper integrals.
3. Study the definition of convergent sequence and series.
4. Study integral test, ratio test, root test, Leibniz test and their proof.
5. Review Taylor's Theorem and its proof.
6. Clarify the relation between a function and its Taylor series. For example, how do you generate a Taylor series from a given function? when and where does a function equal the Taylor series it generates?
7. Memorize Taylor series of basic functions.
8. Review calculation of Taylor series including differentiation, integration and multiplication.
9. Review the application of Taylor series in approximate integrals and solving differential equations.
10. Review calculus of parametrized curves, including slope of a parametrized curve, higher order derivatives, and application in polar coordinates.