Math116: Complex Analysis

MoWeFr 9:30 – 10:20am at 380X

Instructor: Yakov Eliashberg

1. Complex Analysis Basics

9/23-9/27 Complex numbers from the real perspective.
Recollection of differential 1-forms and their integration
Holomorphic functions, $\overline{\partial}$-operator and Cauchy-Riemann equations

9/30-10/5 Cauchy theorem and its corollaries. Cauchy integral formula
Converging power series. Exponential, trigonometric functions and logarithm

10/8-10/12 Zeroes and poles. Classification of singularities. Meromorphic functions
Computation of contour integrals. Examples
Residues. More integration techniques.

10/15-10/19 Riemann sphere and the introduction to Riemann surfaces
Various applications of Cauchy integral formulas
Schwartz reflection principle


10/29 Midterm exam

2. Conformal mappings

10/31 Examples of conformal mappings.


11/12-11/16 The Riemann mapping theorem and its applications.
11/26-11/30 Harmonic functions.
    Dirichlet problem and its solutions.

12/3-12/7 Subject overview.