

Functions of a complex variable
MATH 70300 Syllabus
Fall 2006

Lectures: T, Th. 10:00–11:30, Room 6496.

Instructor: Yiannis Petridis, (718) 960-5112, Room 4303.

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Office Hours: Th 12:30–2:30 PM or by appointment.

Remark: This class has a web site, where you will be able to find the homework assignments and other information. The URL is:

<http://comet.lehman.cuny.edu/petridis/70300.html>

Homework: Homework is assigned approximately every week. The students are strongly advised to work on all the homework problems to make sure they are keeping pace with the class. Homework is accepted until the solutions have been posted.

Exams: There will be two take-home exams: The students will have 48 hours to complete these. Cooperation with other people is prohibited and use of books is restricted to the textbooks.

Contents: Complex numbers, holomorphic functions, Cauchy-Riemann equations, power series, complex integration.

Conformal mapping. Linear fractional transformations. The exponential and logarithmic functions.

Cauchy's theorem, applications to integrals, Cauchy's integral formulas, Liouville theorem, principle of analytic continuation, Morera's theorem, theorems of Weierstraß and Hurwitz on uniform convergence.

Schwarz reflection principle, zeros, poles and residues, Calculus of residues, applications to definite integrals.

Casorati-Weierstraß theorem, argument principle, Rouché's theorem, maximum modulus theorem, open mapping theorem, fundamental theorem of algebra, Schwarz lemma, automorphisms of the unit disc and the upper half plane.

Harmonic functions, Poisson kernel.

Mittag-Leffler theorem.