Math 5021-Fall 2015

Complex Analysis I

General information

Location: Cupples I Room 6
Time: TTh 2:30-4pm
Professor: Greg Knese
Office location: Cupples I room 211A
Office hours: MW 2-4pm, by appointment, or just drop by.
Email: geknese at wustl dot edu

Course description

An intensive course in complex analysis at the introductory graduate level. Math 5021-5022 form the basis for the Ph.D. qualifying exam in complex variables. Prerequisite: Math 4111, 417 and 418, or permission of the instructor.

You should be proficient in undergraduate real analysis: naive set theory, epsilon-delta proofs, topology of R^n, topology of metric spaces, some general topology, rigorous multivariable calculus (partial derivatives, inverse function theorem, Green's theorem).

Textbook

The official textbook is **Complex Analysis** by Theodore W. Gamelin.
Refer to http://www.math.ucla.edu/~twg/CA.book.html for corrections.

Exams

There will be one midterm in class on **October 8** and a final exam on **December 16, 3:30-5:30pm.**

Homework

There will be weekly homework assignments. These should be written up clearly and in detail preferably typed using LaTeX. You may discuss the homework verbally with other students provided you have already given the homework a serious attempt. If you have already solved a problem and someone asks you about it, then any help you provide should consist of hints or suggestions and not complete solutions.

In particular, homework should be written up independently and it should not be possible to tell who worked with whom. Do not search or post requests for solutions to HW.

Grade breakdown

Homework: 40%
Midterm exam: 20%
Final exam: 40%

Course topics

Ideally, we will get through the entire book in Complex Analysis I and II, leaving some topics as required reading and some as recommended reading. In this course, I will aim to get to the Riemann mapping theorem. There may be some supplemental reading on the homology version of the Cauchy integral theorem.

Supplementary References

Complex Analysis by Lars Ahlfors
Complex Function Theory by Donald Sarason
Functions of one complex variables by John B. Conway
Complex Analysis by Stein and Shakarchi
Function theory of one complex variable by Greene and Krantz
Complex Analysis: the geometric viewpoint by Krantz
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