Mat 573 — Complex Analysis II — Spring 2024

Line No.   33048
Time   MW 3:00-4:15 PM
Room   ECGG315
Instructor   Jack Spielberg
Office   PSA-747
Office Hours   TBA, and by appointment.
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Text   Ahlfors, *Complex Analysis, 3rd edition*, McGraw-Hill, 1979 (but see below).

Course Description

This is the continuation of MAT 572. Topics I plan to cover (time permitting) include

- extensions of the maximum principle, the three lines theorem, the Phragmen-Lindelof theorem
- series and product expansions
- the gamma function and Bohr's theorem
- Dirichlet series and Dirichlet's theorem on primes in arithmetic sequences
- the Riemann zeta function and the prime number theorem
- the Riemann mapping theorem
- harmonic functions and the Dirichlet problem

This is a theoretical math course. We will give complete proofs of all the results, and the work expected of students will mainly consist of proofs (rather than calculations). There will be regular homework assignments, but no exams.

Students not currently taking MAT 572 are welcome, but the prerequisite is familiarity with the general form of Cauchy's theorem and its consequences.

There is no set text for this course. Ahlfors (Complex Analysis, 3rd edition) is a good reference for much of the material. Conway (Functions of One Complex Variable) is also good, and somewhat complementary to Ahlfors. In any case, the lectures are meant to be self-contained.

Questions about the course are welcome, and should be addressed to the instructor at jack.spielberg@asu.edu.