

Math 463, Fall 2015

Complex Variables

Professor Patrick Fitzpatrick
Room 3107, Math Building (pmf@math.umd.edu)

1 Math 463-Fall 2015-General Information

Text for the Course

Complex Variables, Ward and Churchill. 12th Edition (If you take personal responsibility for checking small differences (say numbering of problems), you can use the 10th or 11th edition)

Office Hours

I will have office hours on Tuesdays and Thursdays between 9.00 and 10.00 after the class in my ooffice . Office hours can also be arranged by appointment.

E-Mail

You may write to me at pmf@math.umd.edu.

Exams

There will be a two regular class exams and a Final Exam.

Problems

Problems will be assigned, to be turned in on Tuesday and I expect they will be returned graded on the following Thursday.

Grades

Semester grades will be assigned on the following basis: Each Class Exam-20 points; The Final -35 points; The Homework-25 points.

2 General Syllabus

Topics

- (1) Complex Numbers
- (2) Complex arithmetic Geometric representation Polar form
- (3) Powers
- (4) Roots
- (5) Elementary plane topology
- (6) Analytic Functions
- (7) Continuity
- (8) Differentiability
- (9) Cauchy-Riemann equations
- (10) Analytic functions
- (11) Harmonic functions and harmonic conjugates
- (12) Contour Integrals
- (13) Upper bound estimates Anti-derivatives
- (14) Cauchy-Goursat theorem Cauchy integral formulas Liouville's theorem
- 15() Fundamental theorem of algebra Maximum modulus theorem
- (16) Elementary functions
- (17) Exponential function Logarithmic function Trigonometric functions ?
- (18) ??Hyperbolic functions The functions z^c and c^z
- (19) Infinite sequences and series
- (20) Sequences and series of constants Sequence and series of functions Geometric series
- (21) Power series and Taylor series Laurent series
- 22() Residues
- 23() Isolated singularities
- (24) Residues and the residue theorem Evaluation of real integrals by residues
- (25) Boundary value problems and applications
- (26) Conformal mappings
- (27) Mapping properties of some elementary functions
- (28) Application to the steady state heat flow and electrostatic potential
- ???