

2016 MATH 300

Complex Analysis

Instructor: Prof. Dong Li, MATH Annex 1205 dli@math.ubc.ca

Textbook: *Fundamentals of Complex Analysis with Applications to Engineering and Science (Third Edition)*, by E. Saff and A. Snider.

Tentative Course Outline (Note: this is tentative! we might make some adjustments later):

- Fundamentals; complex exponentials, roots of unity, powers and roots, elementary mappings: (Sections 1.1–1.6)
- Functions of a Complex Variable: analytic functions, Cauchy-Riemann equations, Harmonic functions, some special functions such trigonometric functions (Sections 2.1–2.6, 3.1–3.2)
- Multivalued functions, inverse functions, and branch cuts. The Logarithm function. (Sections 3.3, 3.5).
- Contour integration. Cauchy's integral theorem, path independence, (Sections 4.1–4.6)
- Laurent series, singularities, poles and residue Calculus (Sections 5.5–5.7, 6.1–6.7)

Grading: the weighting will be: Final 50%, 2 Midterms $2 * 20\% = 40\%$, Assignments 10%. (**Warning:** Midterms will be held in class and there will be no make-up midterms for any reason!)

Homework: There will be weekly homework assignments assigned. No late homework will be accepted for any reason.