

Review 2

All Chapters and Problems are referring to *Schaum's Outline of Complex Variables*, 2ed Speigel et al. Definitions of the words in **boldface** may be asked on the exam.

Chapter 5 Definitions: Cauchy Integral formulas, Cauchy's Inequality Liouville's theorem, Fundamental Theorem of Algebra, Gauss Mean value Theorem, Poisson Integral formulas.

Proofs: Cauchy Integral formulas, Liouville's theorem, Gauss Mean Value Theorem

Sample problems: 5.2,5.5, 5.29, 5.52, 5.70

Chapter 6 Definitions: Singularities, Poles, Taylors Series, Laurent Series

Be able to compute Taylor and Laurent series, identify orders of poles and give examples. Know Taylor series of $\frac{1}{1-z} e^z, \sin(z), \cos(z)$.

Proofs: Taylors Theorem (6.22)

Sample problems: 6.23a, 6.26,6.27,

Chapter 7 Definitions: Residue, Cauchy Principal value Know and be able to apply the Residue Theorem, Calculate residues, Use residue theory to calculate real integrals.

Proofs: $\oint_C f(z)dz = 2\pi ia_{-1}$ pg 205, 7.7

Sample problems:7.9, 7.10,7.12,7.18