

Review For 415/515 Test 1

Definitions of the words in **boldface** may be asked on the exam.

Chapter 1

Definitions: absolute value(norm), conjugate, polar form, n^{th} roots of unity, Euler's formula, dot product, cross product

~~Proofs: reverse triangle inequality (1.7 c)~~

Sample problems:13, 16, 19, 22,37

Chapter 2

Definitions: multiple-valued functions, $\exp(z)$, $\ln(z)$, $\cos(z)$, $\sin(z)$, limits, continuity, branch lines, sequences, infinite series

Sample problems:2, 4, 9, 30, 41

Chapter 3

Definitions: derivative, analytic, Cauchy-Riemann equations, harmonic functions, harmonic conjugates singular points, orthogonal families

Proofs: Cauchy Riemann equations(3.5).

If $f = u + iv$ is analytic show that u, v are harmonic if they have continuous second partial derivatives. (3.6)

~~Orthogonal families. (3.27)~~

Sample problems: 1,2,4,7,11,38

Chapter 4

Definitions: complex line integral, indefinite integral simply and multiply connected regions, Cauchy's Theorem, Morera's Theorem

Proofs: Cauchy's Theorem (4.11)

Sample problems:2,5,17,20,22,23