For the upcoming test you will be asked questions based on the theory and homework so far (1.1-1.6 and 2.1-2.4 of the text). Some questions may be directly from the homework (including odd numbered questions), or slight variations thereof, or I may ask about an aspect of some proof. I will not ask you to reproduce large proofs of the type we did in class recently (showing that $f(x) = z^n$ is continuous, for example), but you may see the shorter homework type of proof or "show" questions.

Cheat Sheet

A single double-sided letter-size "cheat sheet" containing formulae, theory and numerical values may be used for the test. The cheat sheet may not contain worked examples however, and must be submitted when you hand in your test.

Definitions and Concepts

Key concepts you should know:

1. the basic algebra rules for complex numbers, including complex conjugation.
2. how to graph or sketch a region described by an equation (exercise 1.7.7)
3. how to convert between the Cartesian and polar forms of complex numbers.
4. how to use Demoivre's formula and/or the complex exponential to work with complex numbers in polar form.
5. how to compute powers and roots
6. how to categorize sets in the plane (open, closed, etc.)
7. how to decompose complex valued functions into real and imaginary parts
8. how to determine the image of a set under a complex mapping.
9. the definition of convergence of a sequence and how to use it to prove a basic convergence result (exercise 2.2.4 for example).
10. the definition of the limit of a function and how to use it to prove a basic limit or continuity result (exercise 2.2.14 for example).
11. the limit definition of continuity.
12. what it means for a function to be differentiable, analytic, entire, and the derivative rules mentioned so far.
13. how to use the Cauchy-Riemann equations to prove (or disprove) differentiability.

Important Theorems and Formulas

Know the statement and application of the following theorems and formulas:

1. DeMoivre's formula
2. The formula (or method) for finding the m^{th} roots of a complex number
3. The Cauchy-Riemann equations (Theorems 4 and 5 of 2.4).