PHY100B HW #2
Due Tuesday, 1/22/08 @ 5pm in Michael Johnson’s Mailbox
Functions of a Complex Variable

Reading

Read Sections 1-3 of Chapter 14 of Boas.

Problems

This problem set has a few more review problems from Chapter 2, but mostly involves problems on complex analysis from Chapter 14. The problems involve fundamental results which we will later apply to solve sums, integrals, and differential equations. By the end of this assignment you should be comfortable with complex functions and equations (including complicated examples involving multi-valued functions). You should understand how to determine if a function is analytic and some of the resulting consequences.

From Boas Chapter 2:

Section 17, page 81, Problems 19, 25

From Boas Chapter 14:

Section 1, page 667, Problems 7, 15, 18.
Express your answers in terms of either $x, y$ or $|z|, \theta$.

Section 2, page 672, Problems 23, 45, 58

Section 3, page 676, Problems 10, 14, 15, 17, 22.

Notes:

i) Problem 10 does not use the techniques of Chapter 14 Section 3. Instead, it uses the techniques of Chapter 6 Section 8. So, there is no obstacle to starting problem 10 immediately. On the other hand, problems 14, 15, 17, 22 use results that we will discuss this week.

ii) It may be easier to work problem 15 before problem 14.

iii) Problem 22 uses the formulas given in problem 21. (I did not assign problem 21, but I hope that it is nevertheless clear to you how this formulas are obtained. If not, ask!)