

Physics 263: BTM Problem Set #10

These problems are due by 5:30pm in the box in 1011 on Tuesday, May 2. The midterm will be on Thursday, May 4, in class. This assignment addresses problems from Chapter 6, “Functions of a Complex Variable.” You will only be officially responsible for section 6.2, so the regular assigned problems are from there. However, since all the rest is valuable (and interesting) stuff to know, I’ve selected extra problems as bonus problems to encourage you to check out the other sections. Please ask questions!

1. **BTM Problem 6.2.5.** Trig functions in the complex plane. Practice with the exponential form of sin’s and cos’s.
2. **BTM Problem 6.2.7.** This problem is to help acquaint you with the series for logarithms in the complex plane.
3. **BTM Problem 6.2.11.** Basic root-taking with complex numbers.
4. **BONUS: BTM Problem 6.1.5.** This references the definition of analyticity. Just follow the definitions in this section.
5. **BONUS: BTM Problem 6.3.2.** Integrating around a contour in the complex plane. This is quite straightforward, but seems weird at first.
6. **BONUS: BTM Problem 6.4.6.** It will take some investment of time on your part to get up to speed for these integrals, but this is well worth the effort.