Math 410 **Dr. DeTurck**
Assignment 6 **Due Tuesday, November 10, 2009**

Reading: Textbook, Chapter 3 (you just have to skim section 5), also take a look at the first couple of sections of chapter 4.

Problems to hand in:

1. Textbook page 105, problems 8, 9, 10, 12, 14, 15(d)
2. For each of the following polynomials, determine how many of its roots lie inside the circle $|z| = 1$:
   (a) $z^6 - 5z^4 + z^3 - 2z$
   (b) $2z^4 - 2z^3 + 2z^2 - 2z + 9$
3. Determine the number of roots of the equation $2z^5 - 6z^2 + z + 1 = 0$ in the region $1 \leq |z| < 2$.
4. Show that if c is a complex number such that $|c| > e$, the equation $cz^n = e^z$ has n roots inside the circle $|z| = 1$.