

## Assignment #9

### Due Monday, 18 April 2016

Please read Sections IV.5, IV.6, IV.7, IV.8, V.1, and V.2 in the textbook. Yes this is a fair amount of reading. However, as explained in class, IV.6–IV.8 are treated very lightly. The assigned problems from IV.8 are easy. I will grade the circled Exercises.

#### Section IV.5, page(s) 119, Exercises:

- (4) *(This is a reasonably challenging problem, but worthwhile. Notice the hint in the back of the book, suggesting you use Cauchy Estimates. (An alternative route uses Cauchy Integral Formulas.) Your goal: show that  $f^{(m)}(z_0) = 0$  for any  $m > n$  and for all  $z_0$  in the disk  $|z| < R$ . A fact from section II.3 then shows that  $f^{(n)}(z)$  is constant, and then antidifferentiation shows that  $f(z)$  is a polynomial.)*
- 5 *(Assume that  $\nabla \times \mathbf{V} = 0$  and  $\nabla \cdot \mathbf{V} = 0$ , as in section III.6.)*

#### Section IV.8, page(s) 128–129, Exercises:

- (1)
- (2)
- 4

#### Section V.1, page(s) 132–133, Exercises:

- (1)
- (2)
- (3)
- 4