Homework Assignment #3
Quiz in Class, Friday, January 26

Submit problems 4, 6, and 9 for grading.

1. Write out in detail the derivation going from Equation 2.43 to Equation 2.45 in the text.
4. Problem 2.44 on Page 107. I used Equation 2.30 to calculate the potential (relative to infinity) at the two points and then subtracted.
5. Problem 2.45 on Page 107, energy of a sphere of charge. Calculate it from both Eqn. 2.43 and Eqn. 2.45.
6. Problem 3.1 on Page 115. Average potential over a sphere from a charge located inside the sphere. The solution is very similar to the derivation given on the preceding page for a charge outside the sphere.
7. Problem 3.5 on Page 121. Uniqueness theorem.
10. Consider the analytic function $f(z) = ze^{-z}$, where $z = x + iy$ and $x, y$ are real. Find the real part of this function and verify that it satisfies Laplace’s equation in 2D.