

Math 3C03
M. MIN-OO
Assignment #2

DUE: THURSDAY, OCTOBER 3RD, 2013 IN CLASS AT THE BEGINNING OF THE LECTURE

1. Do problem 12.14 on page 429 in the textbook.
2. Evaluate the Fourier transform $\widehat{\psi}(\vec{k})$ for $\vec{k} = (0, 0, k)$ (in the direction of the axis of symmetry) where

$$\psi(x, y, z) = \frac{1}{\sqrt{32\pi a_0^5}} z e^{-\frac{r}{2a_0}}$$

is the wave function for a $2p$ electron in the hydrogen atom (r is the radial distance to the origin).

3. Do problem 13.4 on page 460 in the textbook
4. Do problem 13.18 on page 464 in the textbook
5. Do problem 15.12 on page 525 in the textbook.
6. (*bonus question*) Do problem 13.8 on page 461 in the textbook.