Quantum Mechanics and Atomic Physics 750:361

Prof. Sean Oh, Fall 2011

HW #13

Due date: Monday, Dec. 12, 2011, at the beginning of class: no late HW will be accepted.

1. Reed, Prob. 9-3

2. Reed, Prob. 9-5

3. For an infinite potential well defined over [0, L], the wavefunction of a particle is prepared at t=0 as $\varphi(x) = \begin{cases} Ax, & for\ 0 < x < L/2 \\ -A(x-L), for \frac{L}{2} < x < L \end{cases}$. Each of the following parts is worth a full HW problem.

(a) Find the normalization constant A

(b) When you do the energy measurement, find the probability of getting energy of E_1, which represents the lowest energy value of the infinite potential well problem.

(b) When you do the energy measurement, find the probability of getting energy of E_2, which represents the second lowest energy value of the infinite potential well problem.

4. Reed, Prob. 9-12

5. Reed, Prob. 9-16

6. Reed, Prob. 9-21