PH 652 Quantum Mechanics 26 February 2016

Homework 5

Due Friday 11 March

1. 13.1.5, p. 359 from Shankar

2. 14.3.6, p. 385 from Shankar

3. 14.5.3, p. 401 from Shankar.

4. 14.5.4, p. 401 from Shankar

5. Consider a spin 1/2 particle with a magnetic moment. At time $t = 0$, the state of the particle is $|\psi(t=0)\rangle = |+\rangle_n$ with the direction $\hat{\mathbf{n}} = (\hat{\mathbf{x}} + \hat{\mathbf{y}})/\sqrt{2}$. The system is allowed to evolve in a uniform magnetic field $\vec{\mathbf{B}} = B_0(\hat{\mathbf{x}} + \hat{\mathbf{z}})/\sqrt{2}$. What is the probability that the particle will be measured to have spin up in the *y*-direction after a time *t*?