Physics 4610, Quantum Mechanics Name _____
Prof. Schroeder
Spring 2020

Problem Set 11

(due Wednesday, April 15, 5:00 pm)

1. Problem 7.2, page 183. (Eigenspinors of S_y.)
2. Problem 7.3, pages 183–184. (Work out matrices and eigenspinors for $s = 1$.)
3. Problem 7.7, page 186. (Identify unknown states in Spins Laboratory web app.)
4. Problem 7.8, page 189. (Spin operator along an arbitrary direction.)
5. Problem 7.11, page 189. (Probabilities for spin measurement at 120°.)
6. Problem 7.13, page 192. (Larmor precession of a spin-1 particle.)
7. Problem 7.16, page 197. (Acting on triplet states with the raising operator.)
8. Problem 7.19, page 198. (Addition of angular momentum for two spin-1 particles.) This is a rather long problem so you might want to save it for last. I expect everyone to answer the earlier parts, but you'll earn extra credit if you finish it!
9. Problem 7.21, page 201. (Matrix representations of ladder operators.) In the final sentence, "four basis states" actually refers to the basis in equation 7.55, not the original basis in equation 7.43.