

## Quantum Mechanics I, Problem Set 5

**Due Wednesday October 17 in class**

1. Townsend Chapter 3, Problem 5.
2. Townsend Chapter 3, Problem 15.
3. Townsend Chapter 3, Problem 16.
4. Townsend Chapter 3, Problem 17.
5. Townsend Chapter 3, Problem 18.
6. Townsend Chapter 3, Problem 20. Use the result of Problem 19.
7. Townsend Chapter 4, Problem 2.
8. Find matrices representing  $S_{\pm}$ ,  $S_x$ ,  $S_y$ ,  $S_z$ , and  $S^2$  for total angular momentum  $j = \frac{3}{2}$ , and verify that your matrices satisfy the commutation relations.

### **Schedule information:**

Monday October 15: JHU fall break day, no class.