PHYS 4380 Quantum Mechanics I

Homework Assignment 06

Due date: October 25, 2018

Instructor: Dr. Daniel Erenso Name: _____

Mandatory problems: 2 & 5

Student signature:_____

Student Comment:_____
_____
_____

Problem #	1	2	3	4	5	Score
Score	/	/	/	/	/	/100

1. Townsend 3.2
2. Townsend 3.3
3. Townsend 3.4,Townsend 3.14
4. ,Townsend 3.17, Townsend 3.20
5. *For* $j = 3/2$

(a) *Determine all the basis states (i.e. the angular momentum eigenstates).*

(b) *Determine the matrix representation of* $\hat{J}_z, \hat{J}_+$, *and* $\hat{J}_-$ *using the corresponding basis states.*

(c) *Use the result* $\hat{J}_+$, *and* $\hat{J}_-$ *in part (b) and find the matrix representation for* $\hat{J}_x$, *and* $\hat{J}_y$

(d) *Solve the eigenvalue equation for* $\hat{J}_y$.