

## Physics 7501: Homework Set No. 8

Due date: Tuesday, November 3, 2015, 5:00pm  
(don't forget to vote!)  
in PRB 3018 (Fuyan Lu's office)

Total point value of set: 100 points

*Note: No MATHEMATICA allowed on any parts of this homework.*

**Problem 1 (10 pts.):** Exercise 7.3.3 (Shankar, p. 196)

**Problem 2 (10 pts.):** Exercise 7.3.4 (Shankar, p. 196)

**Problem 3 (10 pts.):** Exercise 7.3.5 (Shankar, p. 196)

**Problem 4 (20 pts.):** Exercise 7.3.6 (Shankar, p. 197)

Additional questions: What is the ground state energy and wavefunction? What is the level spacing between energy eigenvalues? Show that your eigenfunctions are correctly orthonormalized!

**Problem 5 (10 pts.):** Exercise 7.3.7 (Shankar, p. 202)

**Problem 6 (10 pts.):** Exercise 7.4.1 (Shankar, p. 212)

**Problem 7 (10 pts.):** Exercise 7.4.2 (Shankar, p. 212)

**Problem 8 (10 pts.):** Exercise 7.4.3 (Shankar, p. 212)

**Problem 9 (10 pts.):** Exercise 7.4.4 (Shankar, p. 212)