Homework 9
Due by 11pm on Wednesday, April 22nd, 2020

Reading: Ch. 4, section 4.3 and 4.1.3.

1. G&S Problem 4.21.
2. G&S Problem 4.22.
3. G&S Problem 4.23.
4. G&S Problem 4.24.
5. G&S Problem 4.25.
6. G&S Problem 4.27.
7. How would you solve the 2D harmonic oscillator problem using raising and lowering operators? It is wise to study the simplest case first, so explore the 2D oscillator that has equal spring constants in the x- and y-directions. Go as far as you can in generalizing the 1D arguments we explored together. What can you say about the energy spectrum? In particular, what can you say about its degeneracy? How do you make sense of this degeneracy?