Physics 4610, Quantum Mechanics Name ______________________

Prof. Schroeder

Spring 2020

Problem Set 7

(due Monday, March 9, 4:00 pm)

1. Problem 4.28, page 129 (wavefunctions for two identical particles in a box).
2. Problem 4.29, page 133 (a toy two-state system).
3. Problem 4.31, page 135 (storage required to simulate a quantum computer).
4. Problem 5.1, page 138 (condition for a constant operator to be Hermitian).
5. Problem 5.2, page 138 (proof that position and momentum operators are Hermitian). You'll need to write the inner product explicitly in terms of an integral.
6. Problem 5.3, page 138 (commutator of $\hat{x}$ and $\hat{p}$). You'll need to imagine these operators acting on some arbitrary function $\psi(x)$.