Chem 442: Homework H12 (For Lecture 12)

(only turn in **BOLD** assignment first lecture next week; do all assignments)

1. Problem 2.2 in the book. (page 36)

Turn in 2. Calculate the probability of finding an electron in the one dimensional box, between x=L/3 and x=2L/3, when its in a) the ground state (n=1) ; and b) 1st excited state (n=2).
Which one is bigger, and what can you infer about the shape of the wavefunction at the two different energy levels (i.e. does the electron spend more time in the middle of the box in the n=1 or n=2 state)?

3. Problem 2.4 in the book. This shows how 'electron in a box' wavefunctions can be applied to calculate energy levels of a conjugated molecule like carotene. We'll talk about benzene and other such moelcules later.