

Chemistry 113A HW#2, 10/04/ 2005

The Solutions should be turned in at the start of next weeks' Tuesday discussion section. No Late Homework will be accepted.

- 1) Calculate the eigenvalues and eigen functions for a square well potential with:
 $V(x) = 0, -a/2 \leq x \leq a/2$ and $V(x)=\infty$. Plot the eigenfunctions for the 4 states with the lowest eigenvalues. Draw line spectra for the 4 lowest frequency transitions on the same plot with $a = 0.1$ nm and $a = 90$ pm(picometers) and mass, $m = 9.1 \times 10^{-31}$ kg.
- 2) Use the Heisenberg Uncertainty Principle to calculate the zero-point energies for the two potentials in problem #1).