1. **Uncertainty principle:** Use uncertainty principle to estimate the ground state energy of a particle in a harmonic oscillator potential $V(x) = \frac{1}{2}m\omega^2 x^2$. Also estimate the amplitude of oscillation of the particle at the ground state.

2. **Wave function and average values:** For 1s electron in hydrogen atom, prove that the maximum probability for finding the electron is at the Bohr radius. Calculate the average radius of the electron.

3. **Superposition of wave functions:** A particle in a 1D infinite potential well (particle in a box) has a wave function which is a superposition of n_1 and n_2 states. What is the time dependence of it average position x?

4. **1D Schrodinger equation:** Make sure you understand the solutions to 1D potential well and 1D potential barrier problems. Try repeating these calculations with book/notes closed.