

Physics 267: Problem #15

1. Use the Schrödinger equation and the wavefunction  $\psi_0(x) = Ae^{-\alpha x^2}$  to find the ground state energy of the harmonic oscillator. Hint: remember that energy is independent of position.
2. Which system would have more closely spaced energy levels: A 1 kg mass on a spring that has a period of 1 s, or a diatomic hydrogen atom?