For Monday 10/8, Fall Break:

1. Read all the appendices in Griffiths. If you've taken Linear Algebra, this is review and you should just make sure you remember how to do things. If you haven't, you should try a bunch of the problems (for example, A.6, A.8, A.9, A.14, A.19, A.25). If you're having problem, make an appointment to meet with me THIS WEEK.

For Wednesday 10/10, read Griffiths' section 3.1-3.2 and Q5.6, 6.2-3 and turn in by 9:30 am:

1. Conceptual: Explain all the steps in the derivation in eq. 3.19.
2. Easy Math: Consider the spin eigenvectors (Table Q6.1).
   a. Show that they are orthonormal.
   b. Do they live in Hilbert Space? Explain.
3. Math: Consider the operator $\hat{Q} = \frac{d^2}{d\phi^2}$, where ϕ is the azimuthal angle in polar coordinates, and the functions are subject to the same boundary condition shown in eq. 3.26. Is this operator hermition? Find its eigenfunctions and eigenvalues.

"For realz" weekly homework due 9:30 am on Friday 10/12 is math problem from 10/10.

For Friday 10/12, read Griffiths' section 3.3-3.4 and Q11 and turn in by 9:30 am:

1. Conceptual: Discuss the relationship between continuous, discrete, quantization, normalization, stationary states, bound states, and scattering states. Which of these correspond to each other?
2. Easy Math: A particle of mass m is bound in the delta function well. What is the probability that a measurement of its momentum would yield a value between 0 and $p_0 = \frac{m\alpha}{\hbar}$?
3. Math: A particle in the infinite square well has the initial wave function $\Psi(x,0) = Ax(a-x)$
   a. What is $\Psi(x,t)$?
   b. What is the probability a measurement of the energy would yield the value $\frac{4\pi^2\hbar^2}{2ma^2}$?
   c. What is the probability a measurement of the energy would yield the value $\frac{9\pi^2\hbar^2}{2ma^2}$?
   d. What is the probability of measuring the location of the particle at t = 0 to be between $3a/4$ and a?
   e. If, at time t, you measure the energy to be $\frac{9\pi^2\hbar^2}{2ma^2}$, what is the probability of measuring the location of the particle to be between $3a/4$ and a?
4. Math: Griffiths Problem 3.11