

For Monday 10/1, read Griffiths' section 2.6 and Q11.2 turn in by 9:30 am:

1. Conceptual: Can you come up with a "recipe" like the Q11 rules that will help with solving ANY 1D schrodinger equation problem mathematically?
2. Conceptual: Are the following functions odd, even, or neither? Write a formula for each and plot to check yourself after you've given an answer.
  - a. The fifth Hermite polynomial.
  - b. The fourth excited state of the harmonic oscillator.
  - c.  $e^{x/b}$
  - d.  $(x^5 + x^2)e^{-ax^2}$

3. Conceptual: A particle is in a finite square well ( $V(x)$  given by eq. 2.145) with  $V_0$  and  $a$  such that there are 11 bound states. The initial wave function of the particle is given by

$$\Psi(x,0) = A \left[ \frac{3}{7}\psi_1 + \frac{2}{11}\psi_3 + \frac{1}{3}\psi_4 \right] \text{ where } \psi_1, \psi_3 \text{ and } \psi_4 \text{ are stationary states.}$$

- a. Find A.
- b. What are the possible results of a measurement of Energy and what is the probability of measuring each one?

4. Math: Consider the following potential:  $V(x) = \begin{cases} 0, & x \leq 0 \\ V_0, & 0 < x < a \\ -\alpha V_0, & x \geq a \end{cases}$

- a. Sketch this potential and comment on what you think will happen for  $E < V_0$ .
- b. Calculate the reflection coefficient.

For Wednesday 10/3, come to class with a written list of equations you'd like on Friday's exam.

"For realz" weekly homework due 9:30 am on Wednesday 10/3 is math problems from 9/26, 9/28, and 10/1.