

PHY115A HW#2 Due

10/17/2021 5:00 PM

(Late policy: 0% credit)

1. (25 points) Problem 1.3 in “Introduction to Quantum Mechanics” (2nd edition) by David J. Griffiths.
2. (25 points) Problem 1.4 in “Introduction to Quantum Mechanics” (2nd edition) by David J. Griffiths.
3. (25 points) Problem 1.5 in “Introduction to Quantum Mechanics” (2nd edition) by David J. Griffiths.
4. (25 points) An electron is described by the wavefunction

$$\psi(x) = \begin{cases} 0, & x < 0 \\ Ce^{-x}(1 - e^{-x}), & x > 0 \end{cases}$$

where x is in nanometers and C is a constant.

- (a) Find the value of C that normalizes the wavefunction.
- (b) Where is the electron most likely to be found; that is, for what value of x is the probability for finding the electron largest?
- (c) Calculate $\langle x \rangle$ for this electron and compare your result with its most likely position. Comment on any differences you find.