PHYS 451 Quantum Mechanics I (Spring 2018)
Homework #1, due Thursday Jan 25 in class

Review of elementary probability

1. In an experiment a die is thrown repeatedly until a six turns up. When that happens the experiment is stopped.
   (a) What is the probability distribution function, $p(k)$, that the experiment will last k throws?
   (b) Show that the total probability is $\sum_{k=1}^{\infty} p(k) = 1$.
   (c) What is the most likely number of throws that will need to be done in this experiment?
   (d) What is the average number of throws, $\langle k \rangle$, that will need to be done?
   (e) What is the standard deviation, Δk?
2. Problem 1.11 in Griffiths
3. Problem 1.16 in Griffiths
4. Suppose the wave function of a particle of mass m is given by

$$\Psi(x,t) = ae^{-ibt-cx^2},$$

   where a, b, and c are positive constants. Find the potential in which the particle moves.

Found an error or need a clarification? Email the instructor at sergiy.bubin@nu.edu.kz