

Homework 6

Due May 7, 2014

Please make sure to explain your answers to each of the following questions. Remember: a correct numerical answer without explanation is worth no points! Write up your answers legibly and logically. The not-to-turn-in problems provide additional practice and are important to preparing for exams.

1. Successfully upload at least three programs to Probability Online (you may already have done this!)
2. Let X be a uniformly random number in the interval (a, b) .
 - (a) Define a random variable Y in terms of X so that Y is uniform on the interval $(0, 1)$.
 - (b) Define a random variable Z in terms of X that is uniform on the set $\{1, 2, \dots, n\}$,
3. Section 6.3 Exercise 11
4. Section 5.2 Exercise 34
5. Section 8.1 Exercise 12 (a stronger version of the Law of Large Numbers)
6. On average, there are ten car accidents on I-89 each week. We model the rate of occurrence as a Poisson process with parameter λ .
 - (a) Find the probability that there are exactly seven accidents in the coming week.
 - (b) Find the probability that the first accident next week occurs on Tuesday.

Problems **not** to turn in (Items with * go beyond practice):

1. Section 5.2 Exercise 31
2. More will be added.