

Probability, HW6

Practice problems:

1. Book, page 149–: 50, 51, 53 (error in answers on (b); should be $P(X > E[X]) = 0.26$ and $P(Y > E[Y]) = 0.32$), 54, 59, 70–74, 109(a), 110(a).
2. Large meteorites hit Earth on average once every 1,000 years. Find
 - (a) the probability that Earth gets hit within the next 1,000 years
 - (b) the probability that Earth gets hit more than once within the next 1,000 years
 - (c) the probability that there are no hits within the next 100 years

Turn-in problems.

1. A sample of a radioactive element weighs 10.0 grams. After a year, it weighs 9.9 grams. Make assumptions about the distribution of the lifetime of an individual atom and find (a) the probability that an individual atom remains after 75 years (b) the half-life.
2. You arrive at a post office where there are two clerks, both currently busy so you wait in line for the first one to be free. If service times are exponential and independent, what is the probability that you are the last of the three customers to leave the post office? Give an intuitive argument.
3. Book, problem 112.