

Math 464, Worksheet 4

Consider the simple model of N animals with a probability of 0.03 that any given animal will reproduce in any given day. Suppose that $N(0) = 100$. We already know how to compute the *expected* number of animals on the next day. The purpose of this exercise is to get the *actual* number of animals on the next day (and the next, etc.) The problem is that this is random. Here's one way to model it as a random trial.

1. Generate 100 random numbers, each between 0 and 100.
2. Each random number less than 3 represents an actual birth. Count them.
3. Now you know how many animals there are the next day.
4. Generate that many random numbers. (That is, one random number for each animal.) All between 0 and 100.
5. Count how many are less than 3.
6. Repeat.
7. The goal is to carry this out for a year, but I will be impressed if you can get this method to work for more than about two months.
8. Graph your results.