Use population model from Graded Assignment 1:

- Birth rate is $b = 0.05$ per day per animal.
- Death rate is $d = \frac{N}{5000}$ per day per animal.
- $h = 3$ animals per day are harvested.

1. Write the difference equation for $N$ and find all equilibrium solutions.
2. Repeat the steps of Worksheet 6, using initial $N_0 = 250$.
3. Generate additional columns for the expected population and each equilibrium solution.
4. Graph the random population, the expected population, and all equilibria all on one graph.
5. Working with a group (or at least a partner), generate 100 random trials, each for one full year of population. Count the number of trials that end in extinction.
6. Repeat the entire worksheet for different values of $h$. I am particularly interested in $h = 0$ and $h = 3.125$.
7. Suppose that you get paid $1 for each animal you harvest during the year. But, if the population goes extinct you pay a fine of $100,000. What value of $h$ would you chose, and why?