Homework assigned Wednesday, October 6

Problem 1. Let a population of insects grow with Leslie matrix
$$A = \begin{bmatrix} 0 & 10 & 5 \\ .1 & 0 & 0 \\ 0 & .3 & 0 \end{bmatrix}.$$

(a) $\vec{n}(0) = \begin{bmatrix} 10 \\ 0 \\ 0 \end{bmatrix}$

    (i) How many stage 2 bugs are there when $t = 2$?

    (ii) How many stage 3 bugs are there when $t = 5$?

    (iii) Compute $\vec{n}(40)$, $\vec{n}(50)$, and $\vec{n}(60)$, and the percents in each stage to find the stable age distribution.

(b) $\vec{n}(0) = \begin{bmatrix} 100 \\ 10 \\ 3 \end{bmatrix}$

    (i) How many stage 2 bugs are there when $t = 2$?

    (ii) How many stage 3 bugs are there when $t = 5$?

    (iii) Compute $\vec{n}(40)$, $\vec{n}(50)$, and $\vec{n}(60)$, and the percents in each stage to find the stable age distribution. (Hopefully you get the same results you got in part (a).)

Problem 2. Find the stable age distribution for the Leslie matrix
$$A = \begin{bmatrix} 0 & 2 & 50 \\ .03 & 0 & 0 \\ 0 & .9 & 0 \end{bmatrix}.$$