Mathematics 172

Quiz #12 Name: Key

You must show your work to get full credit.

For the Leslie matrix

$$L = \begin{bmatrix} 0 & 2.0 \\ .9 & 0 \end{bmatrix}$$

and initial condition

$$\mathbf{N}_0 = \begin{bmatrix} 100 \\ 200 \end{bmatrix}$$

find

(1) What is the initial number of one year olds? 100

(2) What is the initial number of two year olds? 200

(3) What is the per capita birth rate of two year olds? 2.0

(4) What is the survival rate of one year olds? .9

(5) What is $\mathbf{N}_1$? $\mathbf{N}_1 = \begin{bmatrix} 400 \\ 90 \end{bmatrix}$

$$\vec{N}_1 = \begin{bmatrix} 0 & 2.0 \\ .9 & 0 \end{bmatrix} \begin{bmatrix} 100 \\ 200 \end{bmatrix}$$

$$= \begin{bmatrix} (2.0)(200) \\ (.9)(100) \end{bmatrix} = \begin{bmatrix} 400 \\ 90 \end{bmatrix}$$