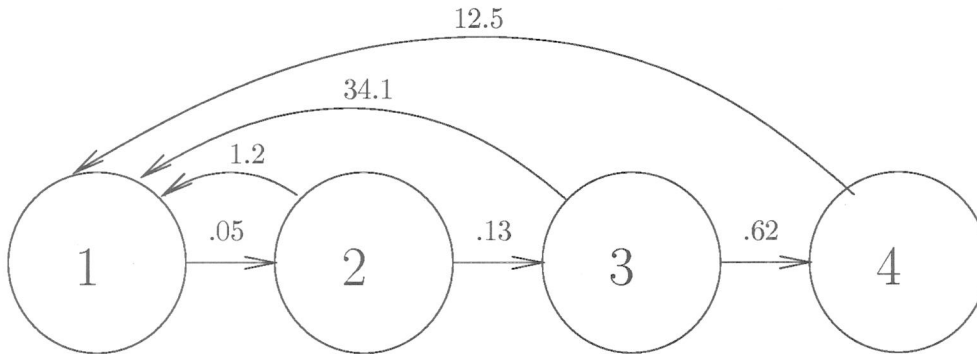


You must show your work to get full credit.

1. For the loop diagram



(a) What is the Leslie matrix?

$$L = \begin{bmatrix} 0 & 1.2 & 34.1 & 12.5 \\ .05 & 0 & 0 & 0 \\ 0 & .13 & 0 & 0 \\ 0 & 0 & .62 & 0 \end{bmatrix}$$

(b) What is the meaning of the number .62?

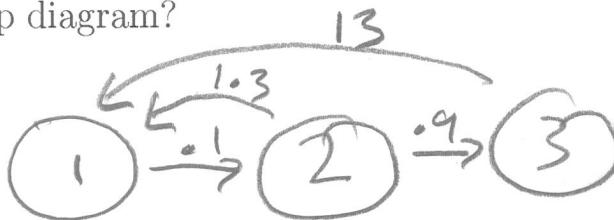
The proportion of stage 3 individuals that survive to stage 4

(c) What is the meaning of the number 34.1?

The fecundity of the stage 3 individuals. That is the average number of off spring of stage 3 mothers

2. For the Leslie matrix $L = \begin{bmatrix} 0 & 1.3 & 13 \\ 0.1 & 0 & 0 \\ 0 & 0.9 & 0 \end{bmatrix}$.

(a) What is the loop diagram?



(b) If $\vec{n}(0) = \begin{bmatrix} 223 \\ 21 \\ 16 \end{bmatrix}$ what is $\vec{n}(40)$?

$$\vec{n}(40) = \begin{bmatrix} 8343.6 \\ 758.2 \\ 628.0 \end{bmatrix}$$