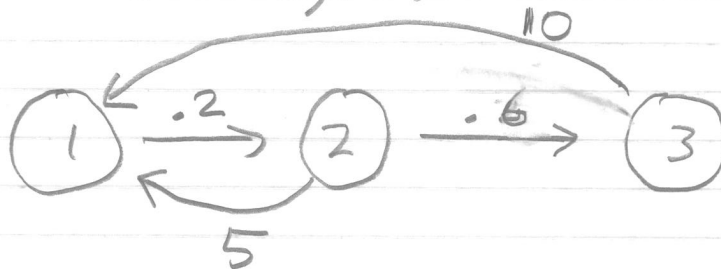


# Homework for Monday October 4

For the diagram



(1) Write the Leslie matrix.

(2) If  $\vec{n}(0) = \begin{bmatrix} 100 \\ 30 \\ 10 \end{bmatrix}$

Use matrix multiplication to find  $\vec{n}(1)$  and  $\vec{n}(2)$

Solution The matrix is

$$L = \begin{bmatrix} 0 & 5 & 10 \\ 0.2 & 0 & 0 \\ 0 & 0.6 & 0 \end{bmatrix}$$

$$\vec{n}(1) = \begin{bmatrix} 0 & 5 & 10 \\ 0.2 & 0 & 0 \\ 0 & 0.6 & 0 \end{bmatrix} \begin{bmatrix} 100 \\ 30 \\ 10 \end{bmatrix} = \begin{bmatrix} 0 + 5 \cdot 30 + 10 \cdot 10 \\ 0.2 \times 100 + 0 + 0 \\ 0 + 0.6 \times 30 + 0 \end{bmatrix} = \begin{bmatrix} 250 \\ 20 \\ 18 \end{bmatrix}$$

$$\vec{n}(2) = \begin{bmatrix} 0 & 5 & 10 \\ 0.2 & 0 & 0 \\ 0 & 0.6 & 0 \end{bmatrix} \begin{bmatrix} 250 \\ 20 \\ 18 \end{bmatrix} = \begin{bmatrix} 0 + 5 \cdot 20 + 10 \cdot 18 \\ 0.2 \times 250 + 0 + 0 \\ 0 + 0.6(20) + 0 \end{bmatrix} = \begin{bmatrix} 280 \\ 50 \\ 12 \end{bmatrix}$$

Do the same for the diagrams

