

25) Dada una matriz T de transición y un vector inicial de probabilidades P_0 calcular P_1 , P_2 y P_3

$$T = \begin{pmatrix} 0 & 1 & 0 \\ \frac{1}{2} & 0 & \frac{1}{2} \\ \frac{1}{3} & \frac{1}{3} & \frac{1}{3} \end{pmatrix} \quad P_0 = \left(\frac{1}{2}, \frac{3}{8}, \frac{1}{8} \right)$$

$$P_1 = P_0 T = \left(\frac{1}{2}, \frac{3}{8}, \frac{1}{8} \right) \begin{pmatrix} 0 & 1 & 0 \\ \frac{1}{2} & 0 & \frac{1}{2} \\ \frac{1}{3} & \frac{1}{3} & \frac{1}{3} \end{pmatrix}$$

$$= \left(\left(\frac{3}{8} \right) \left(\frac{1}{2} \right) + \left(\frac{1}{8} \right) \left(\frac{1}{3} \right), \frac{1}{2} + \left(\frac{1}{8} \right) \left(\frac{1}{3} \right), \left(\frac{1}{2} \right) \left(\frac{3}{8} \right) + \left(\frac{1}{3} \right) \left(\frac{1}{8} \right) \right)$$

$$= \left(\frac{11}{48}, \frac{13}{24}, \frac{11}{48} \right)$$

$$P_2 = P_1 T = \left(\frac{11}{48}, \frac{13}{24}, \frac{11}{48} \right) \begin{pmatrix} 0 & 1 & 0 \\ \frac{1}{2} & 0 & \frac{1}{2} \\ \frac{1}{3} & \frac{1}{3} & \frac{1}{3} \end{pmatrix}$$

$$= \left(\left(\frac{11}{48} \right) \left(\frac{1}{2} \right) + \left(\frac{11}{48} \right) \left(\frac{1}{3} \right), \frac{13}{24} + \left(\frac{13}{24} \right) \left(\frac{1}{3} \right), \left(\frac{11}{48} \right) \left(\frac{1}{2} \right) + \left(\frac{11}{48} \right) \left(\frac{1}{3} \right) \right)$$

$$= \left(\frac{25}{72}, \frac{11}{36}, \frac{25}{72} \right)$$

$$P_3 = P_2 T = \left(\frac{25}{72}, \frac{11}{36}, \frac{25}{72} \right) \begin{pmatrix} 0 & 1 & 0 \\ \frac{1}{2} & 0 & \frac{1}{2} \\ \frac{1}{3} & \frac{1}{3} & \frac{1}{3} \end{pmatrix}$$

$$= \left(\left(\frac{25}{72} \right) \left(\frac{1}{2} \right) + \left(\frac{25}{72} \right) \left(\frac{1}{3} \right), \frac{11}{36} + \left(\frac{11}{36} \right) \left(\frac{1}{3} \right), \left(\frac{25}{72} \right) \left(\frac{1}{2} \right) + \left(\frac{25}{72} \right) \left(\frac{1}{3} \right) \right)$$

$$= \left(\frac{29}{108}, \frac{25}{54}, \frac{29}{108} \right)$$