Stochastic Process week 3 Exercise

Tianlu Zhu

2020571005

Chap 4: 20, 22, 23, 32, 38, 45, 47

20 A transition probability matrix $\mathbf{P}$ is said to be doubly stochastic is the sum over each column equals one; that is,

$$\sum_i P_{ij} = 1, \quad \text{for all } j$$

If such a chain is irreducible and consists of $M+1$ states $0, 1, \cdots, M$, show that the long-run proportions are given by

$$\pi_j = \frac{1}{M+1}, \quad j = 0, 1, \cdots, M$$

Solution:

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