IME625: Stochastic Processes

2021-22 Sem-II

Homework-12

Consider the Markov Chain shown to the right. It has two communicating blocks: $\{1,2\}$ and $\{5,6,7\}$. With $X_0 = 4$, obtain the probability that the chain ends up in $\{1,2\}$. Determine the long-run fraction of time spent by the chain in states 1 and 2. The method you used - will it work if the question was about states 5, 6, and 7?

p_{ij}	1	2	3	4	5	6	7
1	1/3	2/3	0	0	0	0	0
2	1/4	3/4	0	0	0	0	0
3	0	1/3	1/3	1/3	0	0	0
4	0	0	1/2	1/4	1/4	0	0
5	0	0	0	0	2/3	1/3	0
6	0	0	0	0	1/4	1/2	1/4
7	0	0	0	0	0	1/4	3/4