Part IA — Markov Chains Example Sheet 2

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Michaelmas 2017

QUESTION 1

If $s \in S$ is an absorbing state, then $s \to s$ only. State i is recurrent if $\mathbb{P}_i(T_i < \infty) = 1$ where $T_j := \min\{n \geq 1 : X_n = j\}$, and a state is transient if it is not recurrent.

    Suppose there exists some state $i \in S, i \neq s$, st. i is recurrent. Then thm $\Rightarrow$ state i is recurrent iff $\sum_{n=0}^{\infty} p_{i,i}(n) = \infty$.

QUESTION 2

QUESTION 3

QUESTION 4

QUESTION 5

QUESTION 6

QUESTION 7

QUESTION 8

QUESTION 9

QUESTION 10

QUESTION 11

QUESTION 12