Homework 8

Due in class Wednesday November 30th

Problem 1

Problem 8.0.14 from the lecture notes.

Problem 2

(a) What are the recurrent classes of this Markov chain?
(b) For each recurrent class determine the stationary distribution (or prove they do not exist).
(c) What is the probability we eventually hit state 5 starting in state 0?
(d) What is the expected number of steps until we hit state 5?

Problem 3

Consider the graph $G$ with vertices $\{1, 2, 3, 4\}$ and edges $\{12, 21, 23, 32, 34, 43, 14, 41, 24, 42\}$. For each vertex, let the probability of moving from vertex $v$ to any other vertex be $1/d(v)$ ($d(v)$ = number of edges starting at $v$). What is the stationary distribution of this chain?