

Math 339SP, Fall 2025 — Homework 10

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Due November 20 at 5:00 pm

Instructions. This problem set contains problems mostly from Week 11 of class. The problem numbers refer to our textbook, *Introduction to Stochastic Processes with R* by Robert P. Dobrow.

Problem 1. Please do the following textbook problems: 7.3, 7.6, 7.14, 7.15, 7.22, 7.23, 7.25, 7.26

Remark 1. For Exercise 7.6, note there is a small typo in some printings of the textbook. The entry Q_{44} of the generator should be -6 . Also note that the connection between long term proportion of time and limiting distribution in the case of continuous time Markov chains is analogous to that of discrete time Markov chains. That is, the long term proportion of time spent at the state is given by the limiting distribution value for that state.

Remark 2. For Exercise 7.15, please take a look at Example 7.12 for the syntax you can use in Wolfram Alpha for the matrix exponential.