

# Math 339SP, Spring 2022 — Homework 10

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Due April 22 at 5:00 pm

**Instructions.** This problem set covers material from Week 12 of class, with a focus on Chapter 7 of the textbook.

**Problem 1.** Try the following exercises from Chapter 7.

1. 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.
2. Exercise 7.14 Note this problem is demonstrating the fact that the stationary distribution of the continuous time Markov chain is different from the stationary distribution of the embedded discrete time chain.
3. Exercise 7.22
4. Exercise 7.23
5. Exercise 7.25 Please read about the connection between the stationary distribution of the continuous time chain and the embedded discrete time chain on page 292 in advance of this problem.
6. Exercise 7.26