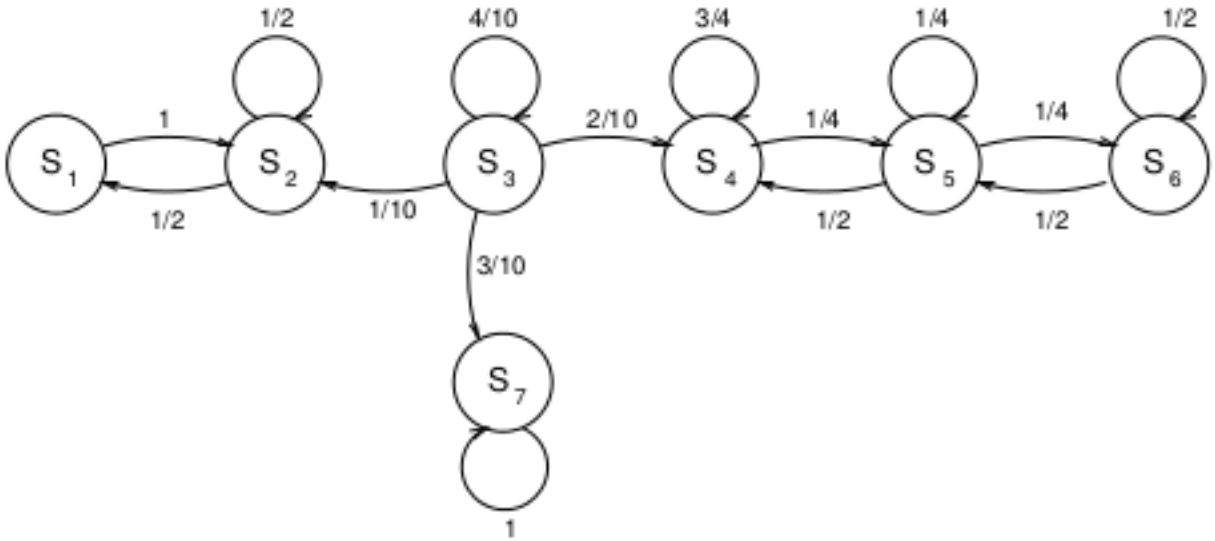
Exercise: Recurrent and transient states

(4/4 points)

Consider the following transition probability graph:



Decide whether each of the following statements is true or false.

1. State S_1 is a transient state.

- Unit 6: Further topics on random variables
- Unit 7: Bayesian inference
- Exam 2
- Unit 8: Limit theorems and classical statistics
- Unit 9: Bernoulli and Poisson processes
- **Unit 10: Markov chains**

Unit overview

Lec. 24: Finite-state Markov chains
Exercises 24 due May 18, 2016 at 23:59 UTC

Lec. 25: Steady-state behavior of Markov chains

False ✔ **Answer:** False

2. State S_5 is a recurrent state.

True ✔ **Answer:** True

3. State S_3 is a transient state.

True ✔ **Answer:** True

4. There are exactly two recurrent classes.

False ✔ **Answer:** False

Answer:

1. False. States S_1 and S_2 form a recurrent class.
2. True. States S_4, S_5, and S_6 form a recurrent class.
3. True. The chain will eventually exit state S_3, enter one of the recurrent classes, and never return to state S_3.
4. False, there are 3: the two identified in parts (1) and (2), plus a third recurrent class consisting of only the single state S_7.

Exercises 25 due May 18, 2016 at 23:59 UTC

Lec. 26: Absorption probabilities and expected time to absorption
Exercises 26 due May 18, 2016 at 23:59 UTC

Solved problems

Problem Set 10
Problem Set 10 due May 18, 2016 at 23:59 UTC

You have used 1 of 1 submissions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