



MITx: 6.041x Introduction to Probability - The Science of Uncertainty



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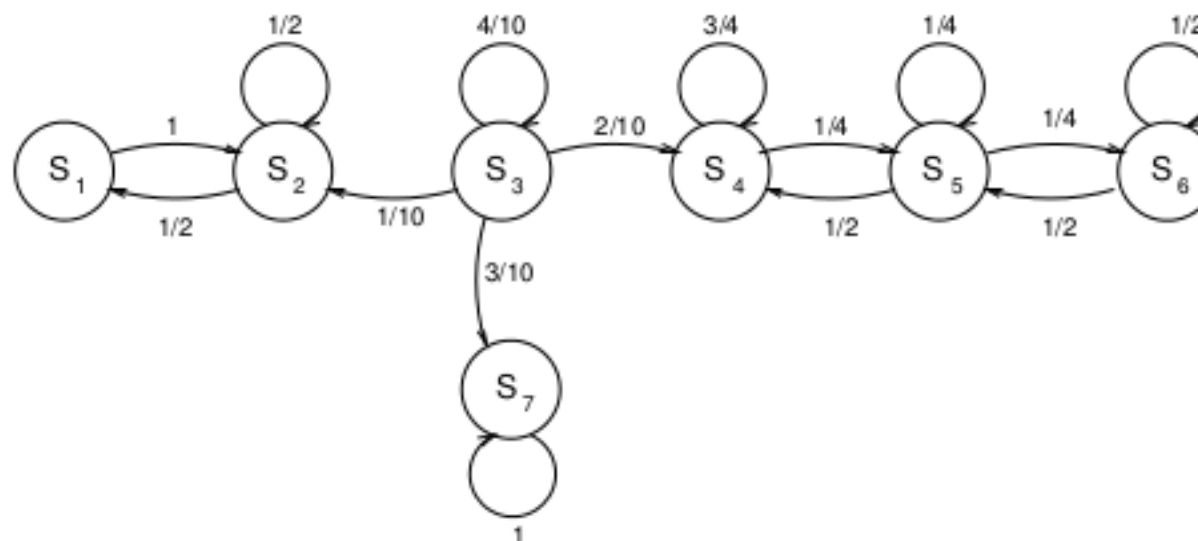
Bookmark

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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
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- ▼ **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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