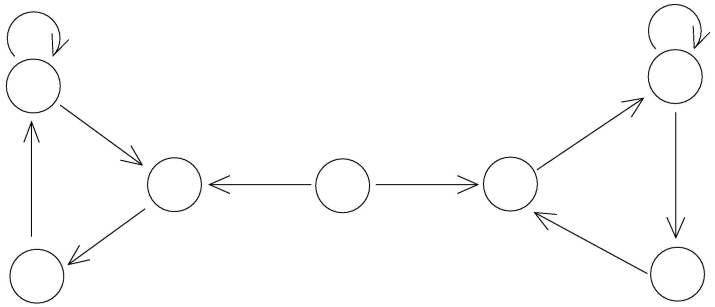
Problem 1: Steady-state convergence

(4/6 points)

Let $X_0, X_1, \ldots$ be a Markov chain, and let $r_{ij}(n) \equiv \mathbf{P}\left(X_n = j \mid X_0 = i\right).$

1. Consider the Markov chain represented below. The circles represent distinct states, while the arrows correspond to positive (one-step) transition probabilities.



For this Markov chain, determine whether each of the following statements is true or false.

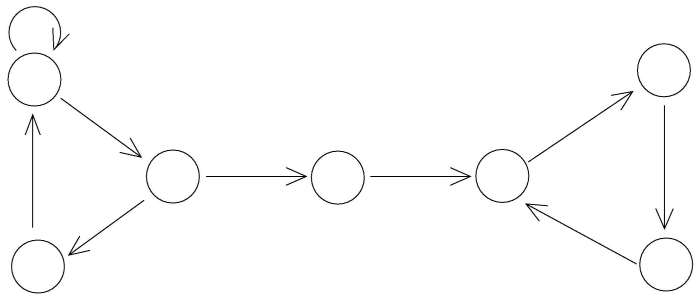
(a) For every i and j, the sequence $r_{ij}(n)$ converges, as $n \to \infty$, to a limiting value π_j, which does not depend on i.

True ✖

(b) Statement (a) is true, and $\pi_j > 0$ for every state j.

False ✔

2. Consider the Markov chain represented below. The circles represent distinct states, while the arrows correspond to positive (one-step) transition probabilities.



(a) For every i and j, the sequence $r_{ij}(n)$ converges, as $n \to \infty$, to a limiting value π_j, which does not depend on i.

False ✔

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

Solved problems

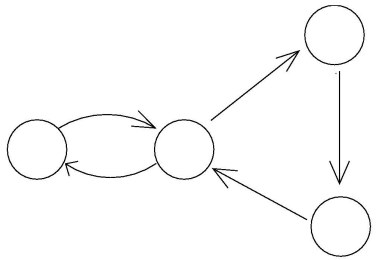
Problem Set 10
Problem Set 10 due May 18, 2016 at 23:59 UTC

▸ Exit Survey

(b) Statement (a) is true, and $\pi_j > 0$ for every state j.

False ▾ ✔

3. Consider the Markov chain represented below. The circles represent distinct states, while the arrows correspond to positive (one-step) transition probabilities.



(a) For every i and j, the sequence $r_{ij}(n)$ converges, as $n \to \infty$, to a limiting value π_j, which does not depend on i.

True ▾ ✔

(b) Statement (a) is true, and $\pi_j > 0$ for every state j.

False ▾ ✖

You have used 1 of 1 submissions

Printable problem set available here .

DISCUSSION

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