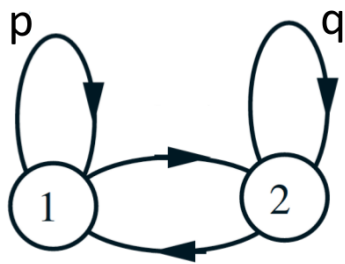


12. Exercise: Convergence

Exercise: Convergence

5/5 points (ungraded)

Consider the following transition probability graph, where $0 \leq p \leq 1$ and $0 \leq q \leq 1$:



1. Give the values of p and q for which you know for sure that $r_{12}(n)$ will never converge to a constant when n goes to infinity.

$p =$ ✓ Answer: 0

$q =$ ✓ Answer: 0

2. For each of the following pairs of (p, q) , would it be guaranteed that $r_{11}(n)$ converges to zero as n goes to infinity?

- $p = 0.99, q = 1$

✓ Answer: Yes

- $p = 0, q = 0$

✓ Answer: No

- $p = 1, q = 1$

✓ Answer: No

Solution:

1. If $p = q = 0$, then $r_{12}(n) = 1$ for all odd n and $r_{12}(n) = 0$ for all even n .

2.

- Yes. Eventually the chain will jump to 2 and stay there forever. Hence, the probability of ending up in state 1 after n transitions will converge to 0 as n goes to infinity.
- No. As stated in part (1), there is no convergence in this scenario since $r_{11}(n)$ will alternate between 0 and 1.
- No. Given that we start in state 1, we will stay in state 1 forever. Hence, $r_{11}(n) = 1$ for all n .

提交

你已经尝试了3次 (总共可以尝试3次)

i Answers are displayed within the problem

讨论

主题: Unit 10 / Lec. 24 / 12. Exercise: Convergence

显示讨论