Announcements

- Please read Sections 5.1, 5.2.1, 5.2.2, and 5.2.3 (both editions) for Monday.
- No class next Friday.
- Office hours will be moved from Thursday, Feb. 9 to Tuesday, Feb. 7 from 2:00 to 4:00.

Notes: We will not begin Chapter 5 on Monday; that will most likely happen on Wednesday.

4.8 Time Reversible Markov Chains

"Consider a stationary ergodic Markov chain (that is, an ergodic Markov chain that has been in operation for a long time)..."

- ergodic?

Notes: This is the very first line from Section 4.8, and so it's time to talk about what "ergodic" means.

4.4 Limiting Probabilities

Some terminology (with which you've already dealt to some extent!)

- period
- aperiodic
- positive recurrent
- ergodic

Notes: Each of the last three of these is a class property.

4.3 Classification of States

Remember this?
If all of the states of a Markov chain communicate with each other, the chain is said to be

A irreducible
B ergodic
C recurrent
D transient

Notes: Correct answer: A.

Theorem: For an irreducible ergodic (time-homogeneous) Markov chain with transition matrix P,

$$\lim_{n\to\infty} P_{ij}^n$$

exists and it does not depend on i (it does generally depend on j).

Notes: This is a very important theorem!