DUE DATE: Friday, Jan. 28 (turn in during class)

Read the Notes on Probability (click on this title in the Index) and the first parts of Chapter 1 in both Lawler (L) and Hoel, Port, & Stone (HPS). Ask after class or during an office hour if you have questions about the Notes on Probability.

Do the following problems:
(i) L, pp. 35-36 (Exercise Section 1.7): #1.1, 1.2, 1.3, 1.4.
For 1.3 and 1.4, it will be easiest to first find the unique stationary distribution \( \pi_{\infty} \) (Lawler calls distributions probability vectors and uses the term invariant instead of stationary). With \( I_3 \) the 3 \( \times \) 3 identity matrix and \( P^T \) the transpose of \( P \), this can be done either by column reducing \( P - I_3 \) to solve \( \pi P = \pi \) or by row reducing \( P^T - I_3 \) to solve \( P^T \pi^T = \pi^T \). After having found \( \pi_{\infty} \), calculate the first few members of the sequence \( P^2, P^4 = (P^2)^2, \ldots, P^{2n} = (P^{2n-1})^2, \ldots \), stopping when two successive members of this sequence have the entries in each of their rows differing from the corresponding entries of the row vector \( \pi_{\infty} \) by no more than .05. If you want to use a calculator to avoid hand calculation of products, fine.

(ii) HPS, p. 41 (end of Chapter 1): #1, #2, #3. Here the answers appear at the back of the book. All you need do is prove that the answers given are correct. But, for the sake of clarity, you should quickly state the meaning of the notations in the given answers, e.g. in #1, what is the connection between \( p, q \), and the 2 \( \times \) 2 Markov matrix for the state space \( S = \{0,1\} \)?

If you can't make it to class on Friday, either give your written up assignment to someone else to hand in or slip it under Prof. Wilson's office door (Room 18 in the basement of Cupples I) before 5 on Friday. NEVER PUT AN ASSIGNMENT IN PROF. WILSON'S MAILBOX OR HAND IT TO ONE OF THE STAFF MEMBERS IN THE MATH DEPARTMENT OFFICE SINCE THE ODDS ARE HIGH HE WON'T SEE IT FOR WEEKS!