

Final Exam: Thurs, Dec 14, 8:00am–11:00am, Altgeld Hall Room 443

- Chapter 9, page 484, Theoretical Exercises 7, 8, 9.
- For the following transition matrices, determine if the corresponding Markov chain is absorbing, regular, or ergodic. If absorbing or regular, determine the limiting distribution conditioned on initial distribution  $x_0$ .

$$(a) P = \begin{bmatrix} 1 & 0 \\ \frac{1}{5} & \frac{4}{5} \end{bmatrix}.$$

$$(b) P = \begin{bmatrix} \frac{2}{3} & \frac{1}{3} \\ \frac{1}{3} & \frac{2}{3} \end{bmatrix}.$$

$$(c) P = \begin{bmatrix} \frac{1}{2} & \frac{1}{2} & 0 \\ \frac{1}{3} & \frac{1}{3} & \frac{1}{3} \\ 0 & \frac{1}{2} & \frac{1}{2} \end{bmatrix}.$$

$$(d) P = \begin{bmatrix} 0 & 0 & \frac{1}{3} & \frac{2}{3} \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ \frac{1}{2} & \frac{1}{4} & \frac{1}{4} & 0 \end{bmatrix}.$$