Math 1360, Fall 2011

Homework #7

Instructor: D. Swigon

due Wednesday Nov 30

Problem 1: Let

$$P = \begin{bmatrix} 1 & 1/3 & 1/3 \\ 0 & 1/3 & 2/3 \\ 0 & 1/3 & 0 \end{bmatrix}$$

be the transition matrix for a Markov chain with three states.

(a) Verify that P is a stochastic matrix.
(b) Check whether P satisfies the hypothesis of Theorem 5.1 (on page 124). What can you conclude?
(c) For initial probability distribution $\mathbf{u}_0 = [120 \quad 180 \quad 90]^T$ find the distributions at next two time steps, $\mathbf{u}_1$ and $\mathbf{u}_2$.
(d) Find the equilibrium probability distribution for the Markov chain.

Problem 2: Exercise 5.8.1 in the book

Problem 3: Exercise 5.8.3 in the book

Problem 3: Exercise 5.8.6 in the book