

Stat 317/253 Winter 2014 HW 2 January 10, 2014

Due **Friday, January 17th, in class** (at the beginning of the lecture period)

Readings: [IPM10e] Section 4.2 (p.195-204)

Problems for Self-Study (NOT for turn in):

1. [IPM10e] Example 4.9, 4.10 on p.197-198
2. [IPM10e] Examples on the absorbing states technique: Example 4.12, 4.13 on p.201-203

Problems for Turn In:

1. [IPM10e] Exercise 4.5 (Hint: First find $P(X_3 = i)$ for $i = 0, 1, 2$.)
2. Continue the previous problem. Find $P(X_1 \neq 1, X_2 \neq 1, X_3 \neq 1, X_4 \neq 1 | X_0 = 0)$.
Hint: Define a new process $\{W_n, n \geq 0\}$ by

$$W_n = \begin{cases} X_n & \text{if } X_k \neq 1 \text{ for all } k = 0, 1, 2, \dots, n \\ 1 & \text{otherwise} \end{cases}$$

Show that $\{W_n, n \geq 0\}$ is a Markov Chain. Find the transition probabilities of $\{W_n, n \geq 0\}$.