

STAT 575

Homework 7 Problems

due Wednesday March 17 at 2PM.

2 Problems to be graded. Show all work.

1. Consider the critical illness model with 3 States: State 1 is healthy (H), State 2 is critically ill (C), and State 3 is dead (D). Suppose you have a homogeneous Markov Chain with transition probability matrix

$$P = \begin{bmatrix} 0.92 & 0.05 & 0.03 \\ 0.00 & 0.76 & 0.24 \\ 0.00 & 0.00 & 1.00 \end{bmatrix}$$

(a) Find $Q = (I - S)^{-1}$ for this transition matrix and interpret the entry q_{21} .

(b) If we are currently in State 2, what is the expected number of steps in the process before the absorbing state is reached?

2. Find the matrix QT . Find the probability of being absorbed by State 3, given we begin in State 2.