STAT 575
Practice Problems for Exam 2 (not to be turned in)

2 Problems.

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

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

1. (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 stated is reached?

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