Mathematics 171 – HW7 – Due Thursday, May 19, 2011.

Problems 7.12,7.15,7.17,7.22,7.25,7.33,7.35 on pages 153-156 plus the following:

O. Consider a Markov chain X_n on $\{0, 1, \dots\}$ whose transition probabilities are defined as follows: $p(k, l) = P(Y + Z = l)$, where Y, Z are independent, Y is $B(k, p)$ and Z is Poisson (λ).

(a) If X_0 is Poisson (γ), what is the distribution of X_1?

(b) If X_0 is Poisson (γ), what is the distribution of X_n?

(c) If X_0 is Poisson (γ), what is the limiting distribution of X_n as $n \to \infty$?

(d) What is the stationary distribution of the chain?