

HW 3 Math 468/568

Due in the beginning of class Thursday, Feb 18, 2016.

1. Consider a Markov chain on the non-negative integers such that starting from x , the chain goes to state $x + 1$ with probability p , for $0 < p < 1$, and goes to state 0 with probability $1 - p$.

- (a) Show that the chain is irreducible.
- (b) Find $P_0\{T_0 = n\}$, $n \geq 1$.
- (c) Show that the chain is recurrent.

2. Durrett 1.65

3. Durrett 1.13