n = 2

Linghai Liu

August 2020

1 Formulating problem

Define two arrays, $\{p_n\}$ and $\{q_n\}$ ($\forall i \in \mathbb{N}$, we have $p_i, q_i \geq 0$ and $p_i + q_i = 1$), which stands for the probability of the two points with initial condition $p_0 = 1, q_0 = 0$.
Define parameters a, b, c as probabilities for moving left, stay the same, and moving right. For a, b, c we make sure $a + b + c = 1$ and $a, b, c \geq 0$

We have the following inductions:

$$p_{n+1} = (a + c)q_n + bp_n$$

$$q_{n+1} = (a + c)p_n + bq_n$$