# Chapter 1 Problem Set

Matthew Stringer

## Question 1.1.

It is possible to model this process as a Markov chain since there are finite states with fixed probabilities based solely on the previous state.

$$S = \{0, 1, 2, 3, 4, 5\}$$

$$P = \begin{bmatrix} \frac{1}{3} & \frac{2}{3} & 0 & 0 & 0 & 0 \\ \frac{1}{3} & 0 & \frac{2}{3} & 0 & 0 & 0 \\ \frac{1}{3} & 0 & 0 & \frac{2}{3} & 0 & 0 \\ \frac{1}{3} & 0 & 0 & 0 & \frac{2}{3} & 0 \\ \frac{1}{3} & 0 & 0 & 0 & 0 & \frac{2}{3} \\ 1 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$