

MA 587/687

Name (Print last name first):

Quiz 5

Question 1

3 balls are distributed between urns A and B. At each step, one of the 3 balls is picked uniformly at random and moved to the opposite urn. In the long run, what fraction of time is urn A empty?

Question 2

A two-state Markov chain with states $S = \{1, 2\}$ has transition matrix

$$P = \begin{bmatrix} c & 1 - c \\ d & 1 - d \end{bmatrix}$$

Determine $f_{11}^{(n)}$ which is the probability that the first return time to 1 is at time n given that $X_0 = 1$.