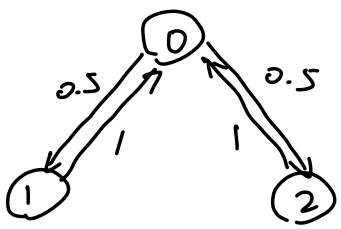
Problem

Q: draw $E(T_i) = ?$ n step. $P(n)$

$$P = \begin{bmatrix} 0 & 0.5 & 0.5 \\ 1 & 0 & 0 \\ 1 & 0 & 0 \end{bmatrix}$$

Solution



$$E(T_i) = \frac{1}{1 - P_{ii}} = 1$$

$$P(n) = P^n$$

$$P^2 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.5 & 0.5 \\ 0 & 0.5 & 0.5 \end{bmatrix}$$

$$P^3 = P$$

$$P(n) = \begin{cases} P & n \text{ is odd} \\ \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.5 & 0.5 \\ 0 & 0.5 & 0.5 \end{bmatrix} & n \text{ is even} \end{cases}$$

Problem 6.2

Ans: $E(T_0) = E(T_1) = E(T_2) = 1$

$$P(n) = P^n = \begin{cases} P^2, & n \textbf{ even} \\ P, & n \textbf{ odd} \end{cases}$$