

Exercise 3.4.2

a) This is completely similar to the problem in sec. 3.4.1.

Here $\alpha = \frac{1}{10}$, $\beta = \frac{6}{10}$, $\gamma = \frac{3}{10}$.

$u = \mathbb{P}(X_T = 0 \mid X_0 = 1)$, where T is the time of absorption. Hence,

$$u = \alpha / (\alpha + \gamma) = \frac{1}{4}.$$

b) For $v = \mathbb{E}[T \mid X_0 = 1]$, we get

$$v = (1 - \beta)^{-1} = \left(\frac{4}{10}\right)^{-1} = \frac{5}{2}.$$