Stochastic Processes: Homework 10

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Problem 1. Durrett, Exercise 2.23

Since c is a constant and by the linearity of expectationsm we have,

$$\begin{aligned} E(T_{J-1} + c) &= E(T_{J-1}) + E(c) \\ &= E(T_{J-1}) + c \end{aligned}$$

Now by the identity in Exercise 2.22, we have,

$$E(T_{J-1}) = E(t_1 + t_2 + \cdots + t_{J-1} \mid t_1, \ldots, t_{J-1} < c)$$

Problem 2. Durrett, Exercise 2.60

Problem 3. Durrett, Exercise 2.61

Problem 4.