Homework 5

Write your solutions to the following problems clearly and neatly. Make sure to explain your reasoning and provide mathematical details that support your answers. For a few tips on writing solutions, see this helpful guide for mathematical writing.

You may write or type your solutions electronically, or write them on paper and scan or photograph them. Upload a single PDF file containing your solutions to the Homework 5 assignment on Moodle.

Book Problems

- Section 2.1 #5, 7abdef (pages 70–71)

- Section 2.2 #13, 16, 22 (pages 79–82)

- Section 2.3 #29, 32, 33, 37, 47 (pages 91–95)

Additional Problem

A pair of dice is rolled until a sum of either 5 or 7 appears. Find the probability that 5 occurs first. *Hint*: One way to do this is to let E_n be the event that a 5 occurs on the nth roll and no 5 or 7 occurs on the first $n - 1$ rolls. Compute $P(E_n)$ and argue that $\sum_{n=1}^{\infty} P(E_n)$ is the desired probability.