

Homework 5

Math 262

due 5:00pm on Monday, September 14

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 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 n^{th} 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.