Homework 17

Math 262

due 5:00pm on Monday, November 16

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 17 assignment on Moodle.

Book Problems

- Section 4.6 #103, 104, 105 (pages 307–309)
- Section 4.9 #133, 135 (pages 331–332)

Additional Problem

The total time X_1 from arrival to completion of service at a fast-food restaurant and the time X_2 spent waiting in line before arriving at the service window have a joint density function given by

$$f(x_1, x_2) = \begin{cases} e^{-x_1} & \text{if } 0 \le x_2 \le x_1 < \infty, \\ 0 & \text{otherwise.} \end{cases}$$

$Y = X_1 - X_2$ represents the time spent at the service window.

(a) Find the pdf of Y.

(b) Find $E(Y)$.