

# Homework 11

Math 262

due 5:00pm on Wednesday, October 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 11](#) assignment on Moodle.

When you use technology to evaluate probabilities in your solutions, please write a few words indicating what you computed.

## Book Problems

- Section 3.3 #47, 55, 68, 70 (pages 182–187)
- Section 3.4 #71, 74, 75ab, 76ac, 77, 79 (pages 194–196)

## Additional Problem

A roll of copper wire has flaws that occur according to a Poisson process with a rate of 1.5 flaws per meter. The *distance between successive flaws* is then exponentially distributed with parameter  $\lambda = 1.5$ . Find the following:

- (a) The mean and variance of the distance between successive flaws on the wire
- (b) The probability that the distance between a randomly selected flaw and the next flaw is at least a meter
- (c) The probability that the distance between a randomly selected flaw and the next flaw is between 0.5 and 1.5 meters