Homework 5
Math 262
due at classtime on Tuesday, October 25

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 2.5 #81, 85, 87, 88 (pages 111–114)

    Note: In #87(c), the radius is 0.1 mile.

- Section 2.6 #91, 93, 98, 102, 103, 105 (pages 120–123)

Additional Problem

For a certain section of forest, the number X of diseased trees per acre has a Poisson distribution with mean $\mu = 10$. To treat the trees, spraying equipment is rented for \$150. The diseased trees are sprayed with insecticide at a cost of \$5 per tree. Let C be total cost of spraying a randomly selected acre of forest.

(a) Find the expected value and standard deviation for C.

(b) Use Chebyshev's inequality to find an interval that contains C with probability of at least 0.8.

(c) Using your knowledge about the Poisson distribution, find a smaller interval than what you found in part (c) that still contains C with a probability of at least 0.8. (Note that X has a Poisson distribution, but C does not.)