EECS 461 Probability and Statistics
Fall Semester 2022
Assignment **#5** Due **27 September 2022**

Reading: Sections 3.4 - 3.9 in Yates/Goodman

Do all of the Quizzes in the Reading assignment but do *not* hand them in. Answers to the Quizzes are on the book's website (search Yates Goodman Wiley)

For all problems from the book, you should use the method(s) from the corresponding section to solve the problem.

1. The run time (rounded to the nearest second) of a given program on a given computing platform is observed many times, and the following *partial* table of PMF and CDF of the random variable R representing run time has been constructed.

Time (sec)	PMF	CDF
5	---	---
6	0.19	0.27
7	0.35	---
8	0.15	---
9	---	0.91
10	---	---

   a. Complete the table by determining the missing values.

   b. *From the CDF of R,* determine the probability that the run time will be in the half-open interval (7,9].

2. The following values represent the voltage across a given resistor (rounded to the nearest volt) in a VERY noisy circuit, in the order the values were observed.

   45, 32, 38, 47, 51, 33, 42, 28, 35, 44, 37, 29, 28, 32, 35, 43, 30, 41, 32, 40

   Put the values in increasing order, then find the mean, median, and mode of this set of voltages. Recall that median and mode may not be unique.

3. Determine the mean, median, and mode of the random variable R from Problem 1. Recall that median and mode may not be unique.

4. Calculate the mean, variance, and standard deviation of the discrete random variable B from Problem 8 of Assignment 4.

5. Calculate the mean of the following discrete random variables:

   a. W from Problem 3 of Assignment 4.

   b. A from Problem 4 of Assignment 4.
   c. R from Problem 5 of Assignment 4.
   d. A from Problem 6 of Assignment 4.
   e. W from Problem 7 of Assignment 4.
6. Problem 3.6.6, p. 114.
7. Problem 3.7.8, p. 115.
8. Calculate the variance and standard deviation of the following discrete random variables:
   a. W from Problem 3 of Assignment 4.
   b. A from Problem 4 of Assignment 4.
   c. R from Problem 5 of Assignment 4.
   d. A from Problem 6 of Assignment 4.
   e. W from Problem 7 of Assignment 4.
9. Problem 3.8.8, p. 116. This result is quite useful.
10. Problem 3.9.2, p. 116.

