

Homework Assignment for Chapters 15 and 16 (Due by 3pm on Apr. 8)

Reference Exercise Problems: Text Book, 15.7 and 16.6 Exercises.

Homework problems

Problem 1 Suppose we construct a histogram with bins $[0, 1]$, $(1, 3]$, $(3, 5]$, $(5, 8]$, $(8, 11]$, $(11, 14]$, and $(14, 18]$. Given are the values of the empirical distribution function at the boundaries of the bins:

T	0	1	3	5	8	11	14	18
$F_n(t)$	0	0.125	0.245	0.415	0.635	0.705	0.810	1.000

Compute the height of the histogram on each bin.

Problem 2 Given is the following information about a histogram:

Bin	Height
$(0, 2]$	0.275
$(2, 4]$	0.100
$(4, 7]$	0.060
$(7, 11]$	0.015
$(11, 14]$	0.003

Compute the value of the empirical distribution function in the point $t = 7$.

Problem 3 Recall the example about the space shuttle Challenger in textbook Section 1.4. The following table lists the order statistics of launch temperatures during take-offs in degrees Fahrenheit, including the launch temperature on January 28, 1986.

26	26	31	53	57	58	63	66	67	67	67	68	69	70
70	70	70	72	73	75	75	75	76	76	78	79	81	90

Find the sample median and the lower and upper quartiles.

Problem 4 Compute the sample standard deviation and MAD for the dataset

$$-N, \dots, -1, 0, 1, \dots, N.$$

You may use the fact that

$$1^2 + 2^2 + \dots + N^2 = \frac{N(N+1)(2N+1)}{6} \quad (1)$$