MTH 372 (2025): Assignment II

Instructor: Monika Arora

Instructions

- Use statistical software R or Python for your codes.

- Due date is April 23, 2025 (11.59 p.m.). No late assignments will be accepted.

- Submit all of your work which include the codes, results, reports and graphs.

- Follow the labelling method for your files.

- If not mentioned, then use $\alpha = 0.05$, assume the sample is a simple random sample and the sample comes from a Normally distributed population.

1. (2.5 points) Suppose a baker claims that his bread height is more than 15 cm, on the average. Several of his customers do not believe him. To persuade his customers that he is right, the baker decides to do a hypothesis test. He bakes 10 loaves of bread. The mean height of the sample loaves is 17 cm. The baker knows from baking hundreds of loaves of bread that the standard deviation for the height is 0.5 cm. and the distribution of heights is normal. Use the 5 percent level of significance and perform the corresponding hypothesis test.

2. (2.5 points) A random survey of 75 death row inmates revealed that the mean length of time on death row is 17.4 years with a sample standard deviation of 6.3 years. Conduct a hypothesis test to determine if the population mean time on death row could likely be 15 years.

3. (5 points) The average amount of time boys and girls ages 7 through 11 spend playing sports each day is believed to be the same. An experiment is done, data is collected, resulting in the table below. Both populations have a normal distribution. Use the 5 percent level of significance and perform the corresponding hypothesis test.

	Sample Size	Average Number of Hours Playing Sports Per Day	Sample Standard Deviation
Girls	9	2 hours	$\sqrt{0.75}$
Boys	16	3.2 hours	1.00

OR

4. (5 points) In a certain food experiment, to compare two types of baby foods A and B, the following results of change in weight (lbs) were observed in 8 children. The data is as follows.

Food A : $49, 53, 51, 52, 47, 50, 52, 53$.

Food B : $52, 55, 52, 53, 50, 54, 54, 53$.

Use this data to test the hypothesis if there is any average change in weight of children due to Food B.
(Hint: Assume the difference of the pairs follows normal distribution.)