Elementary Statistics – Homework No. 4

Issued: Thursday, 15 April 2021 **Submission deadline: Thursday, 29 April 2021**

Question 1 (5 points)
A sociologist found that in a sample of 45 retired men, the average number of jobs they had during their lifetimes was 6.9. The population standard deviation is 1.9.

(a) Find the best point estimate of the mean.
(b) Find the 90% confidence interval of the mean number of jobs.
(c) Find the 95% confidence interval of the mean number of jobs.
(d) Which is smaller? Explain why.

Question 2 (3 points)
In a study, 68% of 900 randomly selected adults said they believe the Republicans favour the rich. If the margin of error was 2 percentage points, what was the confidence level used for the proportion?

Question 3 (4 points)
A researcher found that a cigarette smoker smokes on average 29 cigarettes a day. She feels that this average is too low. She selected a random sample of 8 smokers and found that the mean number of cigarettes they smoked per day was 30. The sample standard deviation was 2.3. At α=0.10, is there enough evidence to support her claim?
Assume that the population is approximately normally distributed. Use the P-value method and tables.

Question 4 (4 points)
The average cost for teeth straightening with metal braces is approximately $5470. A nationwide franchise thinks that its cost is below that figure. A random sample of 24 patients across the country had an average cost of $5168 with a standard deviation of $632. At α = 0.025, can it be concluded that the mean is less than $5470? Assume that the population is approximately normally distributed.

Question 5 (4 points)
Approximately 70% of the US population recycles. According to a green survey of a random sample of 250 college students, 208 said that they recycled. At α = 0.05. is there any sufficient evidence to conclude that the proportion of college students who recycle is greater than 70%?

NOTE: For **Questions 3 to 5**
(1) state clearly the hypotheses and identify the claim,
(2) find the critical value (or P-value, if required),
(3) compute the test value,
(4) make the decision,
(5) summarize the results.