DS 413/613 CLASSWORK/LAB Review of Basic Statistics

Instruction: Generate and email an Rmarkdown File and a Word file that shows all required script, code, and output.

1. Calculus 1 Test Scores are normally distributed with a mean of 73 and a standard deviation of 4

1a) Show and use R code to find the probability that a score is below 70

1b) Show and use R code to find the probability that a score that is above 81

1c) Show and use R code to determine the proportion of scores that are greater than or equal to 68 but less than or equal to 75.

1d) Show and use R code to find the score for which 63% of the scores are less than.

2. In three or four sentences explain how the graph of the normal distribution differs from the graph of the t distribution.

3. A normal distribution has a mean of 20 and a standard deviation of 3.75. Use and show R code to find the height of the curve at the value of 17.

4. A t distribution curve has 3 degree of freedom. Find the height of the curve at the t value of 1.75.

5.

**Table 1: Grams of protein in random sample of energy bars**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Energy Bar - Grams of Protein** | | | | | |
| 20.70 | 27.46 | 22.15 | 19.85 | 21.29 | 24.75 |
| 20.75 | 22.91 | 25.34 | 20.33 | 21.54 | 21.08 |
| 22.14 | 19.56 | 21.10 | 18.04 | 24.12 | 19.95 |
| 19.72 | 18.28 | 16.26 | 17.46 | 20.53 | 22.12 |
| 25.06 | 22.44 | 19.08 | 19.88 | 21.39 | 22.33 | 25.79 |

5a) Create a vector for the data in the table and assign the vector to the variable **V.**

5b) Using and showing R code perform a one sample t test for null and alternative hypotheses given below:

Ho : µ = 20 , Ha : µ > 20

5c) What is the p value?

5d) What is the 95% confidence interval?

5f) Use the p value to determine if the null hypothesis should be rejected.

5g). Use the confidence interval to determine if the null hypothesis should be rejected.