1. In a study designed to test the effectiveness of magnets for treating back pain, 40 patients were given a treatment with magnets and also a sham treatment without magnets. Pain was measured using a scale 0(no pain) to 100 (extreme pain). After given the magnet treatments, the 40 patients had pain scores with a mean of 10.0 and a standard deviation of 2.5. After being given the sham treatments, the 40 patients had pain scores with a mean of 8.3 and a standard deviation of 2.2.
2. Construct the 95% confidence interval estimate of the mean pain score for patients given the magnet treatment.

What is the confidence interval estimate of the population mean µ?

\_\_\_ < µ <\_\_\_\_

1. Construct the 95% confidence interval estimate of the mean pain score for patients given the sham treatment.

What is the confidence interval estimate of the population mean µ?

\_\_\_ < µ <\_\_\_\_

1. Compare the results. Does the treatment with magnets appear to be effective?
2. The eruption height and time interval after eruption of a geyser were measured and are shown below. (graph attached)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Height (x) | 150 | 110 | 125 | 120 | 125 | 140 | 120 | 140 |
| Interval after (y) | 87 | 65 | 40 | 94 | 101 | 92 | 94 | 55 |

1. Find the value of the linear correlation coefficient r.

R=\_\_\_

1. Find the critical values of r from the table showing critical values for the Pearson correlation using α=0.05.

The critical values are ±

1. Is there sufficient evidence to conclude that there is a linear correlation between the two variables?
2. a. Write a correct alternative hypothesis for: Ho: µ ≤ 35.

b. Answer “True” if the statement is always true. If the statement is not always true, replace the underlined words with words that make the statement always true.

1 − α is known as the level of significance of a hypothesis test

1. Find the critical z values. Assume that the normal distribution applies. Two-tailed test; α=0.09

z=\_\_\_\_\_

1. Find the P-value. Also use a 0.05 significance level and state the conclusion about the null hypothesis (reject the null hypothesis or fail to reject the null hypothesis)

The test statistic in a left-tailed test z=-1.56

What is the P-value?

P-value=\_\_\_\_