STAT 412/612 One-Way ANOVA HOMEWORK

1)

**ph in Rain** An environmentalist wanted to determine if the mean acidity of rain differed among the states Alaska, Florida, and Texas. He randomly selected six rain dates at each of the three locations and obtained the following table.

|  |  |  |
| --- | --- | --- |
| **Alaska** | **Florida** | **Texas** |
| 5.41 | 4.87 | 5.46 |
| 5.39 | 5.18 | 6.29 |
| 4.90 | 4.40 | 5.57 |
| 5.14 | 5.12 | 5.15 |
| 4.80 | 4.89 | 5.45 |
| 5.24 | 5.06 | 5.30 |

Assume that the required conditions to use the one-way ANOVA procedure are satisfied.

1a) State the appropriate null and alternative hypothesis for the one-way ANOVA procedure.

1b) Use the R code illustrated in class to produce the ANOVA table.

1c) Which value is SST (Sum of Squares Treatment) in the produced ANOVA table?

1d) What is the F statistic and the p value?

1e) State your decision to reject or fail to reject the null hypothesis. Justify your answer.

2)

**DF Sum Sq Mean Sq F value Pr(>F)**

ind 2 55.17 27.58 0.186

Residuals 9 121.75

Above is a partially completed R ANOVA table.

2a) Missing in the table is the value for Mean Square Residuals. This is also called Means Square Errors in some ANOVA output tables. Find the Mean Square Residuals.

2b) Find the F value (F statistic)

2c) Using the output shown in the ANOVA table, decide if the null hypothesis that all population means are equal should be rejected at the .05 level of significance. Justify your answer.