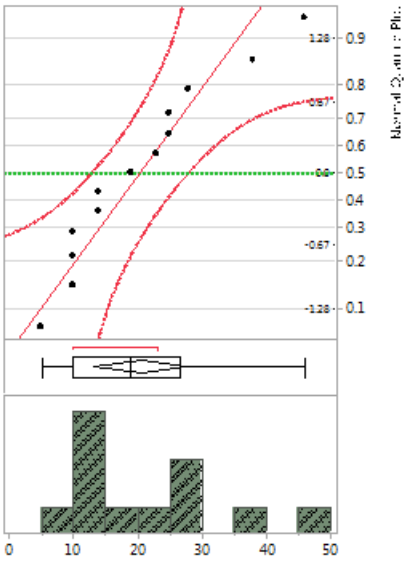
Homework 9 - STAT 231

Due in class, Thursday, Nov 7

Some of the following problems are from the Devore textbook.

1. Chapter 9: Problem 38(b)
   Note: Use the output below created from JMP involving a histogram, normal quantile plot and summaries (mean & standard deviation) for the sample of differences given in this problem.



100.0%	maximum	46
99.5%		46
97.5%		46
90.0%		42.8
75.0%	quartile	26.5
50.0%	median	19
25.0%	quartile	10
10.0%		7
2.5%		5
0.5%		5
0.0%	minimum	5

Mean	20.538462
Std Dev	11.962548
Std Err Mean	3.317814
Upper 95% Mean	27.767357
Lower 95% Mean	13.309566
N	13

2. Chapter 9: Problem 52

3. Chapter 9: Problem 63

4. Using the `Cars2015` dataset, we compared mean highway mileage (HwyMPG) between small and midsized cars on the last homework (Homework 8). Now suppose we wish to conduct a hypothesis test to determine whether the standard deviation in highway mileage for all small cars is less than the standard deviation in highway mileage for all midsized cars produced in 2015. A sample of $n_1 = 47$ small cars had a sample standard deviation of 4.533 HwyMPG while a sample of $n_3 = 34$ midsized cars had a sample standard deviation of $s_2 = 4.785$. Use this information to conduct the test at the 5% level of significance.

5. We are interested in comparing the proportions of cars that have all-wheel-drive (AWD) between different sizes of cars produced in 2015. In a sample of $n_1 = 47$ small cars, 9 of these cars had AWD. Also, 9 cars had AWD in a sample of $n_2 = 34$ midsized cars. Conduct a hypothesis test to assess whether there is sufficient evidence of a difference between the proportions of small and midsized cars having AWD. Use a 2-sided alternative hypothesis and $\alpha = 0.1$.