***E370, Spring 2016***

***Lab Activities week of 3/28/2016***

***Valued at 25 points***

Solve the following problems. Please follow the instructions given and show your work and any Excel commands you use to obtain full credit.

1. Bloom Transit claims that 40% of its buses are on time. A sample of 100 bus arrivals observed last week revealed that 43 arrived on time. At the 0.09 significance level, Can we conclude that Bloom Transit understates its performance? (10 points)
	1. State the null and alternative hypotheses. (2 points)

H0:

H1:

* 1. Calculate the critical value. (2 points)
	2. Write a decision rule using the critical value. (1 point)
	3. Calculate the standardized test statistic. (2 points)
	4. Make a decision based on the decision rule in (c) and interpret your result in terms of the problem. (3 points)
1. An extensive study of the cost of health care in the United States presented data showing that the mean spending per Medicare enrollee in 2003 was $6883 (*Money,* Fall 2003). To investigate differences across the country, a researcher took a sample of 40 Medicare enrollees in Indianapolis. For the Indianapolis sample, the mean 2003 Medicare spending was $5980 and the standard deviation was $2518. (15 points)
	1. State the hypothesis that should be used if we would like to determine whether the mean annual Medicare spending in Indianapolis is lower than the national mean. (2 points)

H0:

H1:

* 1. Let α=0.08, what is the critical value? (2 points)
	2. Write a decision rule using the critical value. (1 poin)
	3. Calculate the standardized test statistics. (2 points)
	4. Make a decision based on the decision rule in (c) and interpret your result in terms of the problem. (3 points)
	5. Now suppose that we know the population standard deviation was $2518. Recalculate the critical value and standardized test statistics. (3 points) What is your decision now based on the decision rule? (1 point) Interpret the result. (1 point)