LAST NAME (Please Print): ________________________________

FIRST NAME (Please Print): ________________________________

HONOR PLEDGE (Please Sign): ________________________________

Statistics 111

Homework 6

You are allowed to discuss problems with other students, but the final answers must be your own work.

For all problems that require calculation, YOU MUST ATTACH SEPARATE PAGES, NEATLY WRITTEN, THAT SHOW YOUR WORK.

Please mark your answer in the space provided. As a general rule, each blank counts for one point. If necessary work is not shown, or if that work is substantially wrong, then you will not get credit even if the answer is correct. (The obvious purpose of this seemingly draconian policy is to prevent people from mindlessly copying each other’s answers.)

Report all numerical answers to at least two correct decimal places.

DUE DATE: IN CLASS ON WEDNESDAY, NOVEMBER 1.
1. Use the data on women in the labor force that is available at:
   http://lib.stat.cmu.edu/DASL/Datafiles/LaborForce.html

   We want to test, at the .025 level, whether there is evidence of increasing numbers of
   women working outside the home.

   One approach to doing this is to compare the average proportion in 1968 to the average
   proportion in 1972. Another approach is to take the difference in proportions over
   time for each city, and then test whether the average difference is greater than zero.

   For the first approach, write the null hypothesis in symbols.

   __________________________________________________________________________

   Write the alternative in words.

   __________________________________________________________________________

   __________ Suppose that the population sd equals the sample sd. (We make this assumption
   so that one of the methods we have covered will apply.) What is the value of
   your test statistic?

   __________ What distribution should your test statistic follow when the null hypothesis is
   true? (Under our assumption that the sd is known.)

   __________ What is your significance probability?

   What conclusion do you reach?

   __________________________________________________________________________

   __________ Set a 95% one-sided lower confidence bound on the difference in the average
   proportion of women in the workforce in 1972 and the proportion in 1968 (the
   later year minus the earlier).
For the second approach, write the null hypothesis in words.

________________________________________________________________________

________________________________________________________________________

Write the alternative in symbols.

________________________________________________________________________

__________  What is the value of your test statistic?

__________  What distribution does the test statistic follow when the null is true?

__________  What is your significance probability?

What conclusion do you reach?

________________________________________________________________________

__________  Set a 95% one-sided lower confidence bound on the average difference in the proportion of women in the workforce between 1972 and 1968 (the later year minus the earlier).

Why is the second approach more powerful than the first?

________________________________________________________________________

________________________________________________________________________

How are you feeling?  _______________________________