Exam 1 Statistics Review problems (Week 5 material is the only Stat material on this exam)

For these questions, assume that the study is to compare the attitudes of males and females to the statement "Each person has only one 'true love.' " Participants had three choices: "Agree," "Disagree," or "Don't Know."

For the purpose of these exercises, we will assume that each exercise has data from a different study (so the numbers aren't the same in all of these.) Also we will assume that each is a well-designed study, so that we can use the data for inference.

Use simulation for each hypothesis test and confidence interval. Use StatKey.

When you report your results in the Piazza discussion, report result for each of your five "runs" and say what the median of those is.

In addition, when the question asks for a confidence interval, pick one of your results and give BOTH the interval and the length of the interval. (This is because the actual interval is much more interesting and helps you develop your intuition about what is happening. We don't ask for that interval in the answer to the problems in this course because that is not very compatible with our machine-based grading method.)

1. From one population, an appropriately representative sample has 38 out of 130 women who "agree." Find a 92% confidence interval for the population proportion of women who "agree" in the population represented by this sample.

2. For a different population, an appropriately representative sample has 51 out of 70 women who disagree with the statement. Do a hypothesis test to test the claim that, in a population that this sample represents, the population proportion of women who disagree is greater than 66%. Give the p-value.

3. For a different population, an appropriately representative sample has 74 out of 242 men who agree, and 72 out of 282 women who agree. Do a hypothesis test to test the claim that, in the population that this sample represents, the proportion of men who "agree" is higher than the proportion of women who "agree." Give the p-value.

4. For a different population, an appropriately representative sample has 372 out of 1214 men who agree, and 363 out of 1412 women who agree. Find an 87% confidence interval for the difference in proportions of men who agree and women who agree.