Carefully Read The Instructions!

Instructions: This is a bonus take-home quiz consisting of 4 problems. Provide solutions to the problems in the space provided. All solutions must be sufficiently justified to receive credit. You may use a calculator. You may use your notes or text on this quiz. Good Luck!

1. In a recent poll of Utah voters, 361 respondents said they had voted by mail before, while 596 said they had not.

   (a) Find a 95% confidence interval for the percentage of Utah voters who have voted by mail.

   (b) Explain what it means to say we have 95% confidence in the interval above by finishing the following sentence:

   “If many simple random samples of 957 Utah voters were taken...
2. In the same poll of Utah voters, 516 out of 949 respondents identified themselves as Republicans.

(a) Test the hypothesis that more than half of Utah voters self-identify as Republicans.

(b) Suppose that we wanted to estimate the percentage of Utah voters that are Republican within a margin of error of 2%, with 97% confidence. What sample size would we need?
3. In a poll of Utah voters from 6 years ago, 398 out of 682 respondents identified as Republicans. Does this poll, along with the one from question #2, provide evidence that the portion of Utah voters that are Republican changed in the past 6 years?
4. To determine which company makes more reliable watches, a consumer advocacy group buys 500 watches from each of two different companies. Of the watches made by Company A, 18 were defective. Of those made by Company B, 13 were defective. Do these samples provide strong evidence that, overall, Company B produces fewer defective watches?