Math 323 Section 9.3 Problems

1. A medical researcher wants to determine whether a new treatment will produce bene-ficial results in a higher proportion of patients that the 0.65 receiving beneficial results from standard treatment. How should the research interpret an experiment if 145 of 200 patients obtained beneficial results with the new treatment? (Use $\alpha = 0.05$.)

2. A random sample of size 100 is drawn from a large lot of manufactured items. We wish to test (at the 0.05 level of significance) whether the proportion of acceptable items in the lot is 0.80, against the alternative that it is less than 0.80.

    (a) What are H_0 and H_1?

    (b) What is the largest number of acceptable items in the sample that will lead to a rejection of the null hypothesis?

    (c) Find the probability of accepting H_0 if the actual proportion of items is 0.75.

3. Officials have conjectured that 3 out of 10 cars would fail emissions requirements if emission testing were implemented. In a pilot program, 73 of 400 randomly selected vehicles failed to meet the requirements. Using this data, test the officials' claim at the 0.01 level of significance.