Quiz # 5 **Stat 3445, Due March 1**

Name:

1. A small amount of the trace element selenium, from 50 to 200 micrograms (mg) per day, is considered essential to good health. Suppose that independent random samples of $n_1 = n_2 = 30$ adults were selected from two regions of the United States, and a day's intake of selenium, from both liquids and solids, was recorded for each person. The mean and standard deviation of the selenium daily intakes for the 30 adults from region 1 were $\bar{X}_1 = 170$ mg and $s_1 = 25$ mg, respectively. The corresponding statistics for the 30 adults from region 2 were $\bar{X}_2 = 140$ mg and $s_2 = 15$ mg. Find a 97% confidence interval for the difference in the mean selenium intake for the two regions.

2. Refer to the comparison of the daily adult intake of selenium in two different regions of the United States, in Exercise 1. Suppose that you wish to estimate the difference in the mean daily intake between the two regions, correct to within ± 5 mg, with probability .99. If you plan to select an equal number of adults from the two regions (that is, if $n_1 = n_2$) how large should n_1 and n_2 be?