Quiz #6
STA211 Statistical Theory and Methods

1. It is commonly acknowledged that grading of the writing part of a college entrance examination is subject to inconsistency. Every year a large number of potential graders are put through a rigorous training program before being given grading assignments. In order to gauge whether such a training program really enhances consistency in grading, a statistician conducted an experiment in which a reference essay was given to 61 trained graders and 31 untrained graders. Information on the scores given by these graders is summarized below:

$$\text{Trained} \quad \text{Sample 1: } n_1 = 61 \quad s_1^2 = 2.15$$
$$\text{Untrained} \quad \text{Sample 2: } n_2 = 31 \quad s_2^2 = 3.91$$

   (a) Test, at the 5% level of significance, whether the data provide sufficient evidence to conclude that the training program enhances the consistency in essay grading.

   (b) Find a 95% confidence interval for $\frac{\sigma_1^2}{\sigma_2^2}$, where σ_1^2 and σ_2^2 are the trained population variance and the untrained population variance, respectively.