Additional Problems for Feburary 19, 2009

1. The state of Arizonia gives pre and post muliple choice tests for the study of world history. They find that students that are in the 90th percentile on the pretest actually do worse in terms of percentile in the post test. They conclude the class is doing a poor job of testing the best students.

   Does the data support this conclution? What else could explain this finding?

2. For the following questions assume that x is the explanatory variable and y is the response variable. Also suppose that $\bar{x} = 3$, $\bar{y} = 5$, $s_x = 2$, $s_y = 3$ and $r = -0.8$.

   (a) What is one point do you know for certain will appear on the least-squares regression line?

   (b) What is the slope of the line?

   (c) What fraction of the variation in the value of y is explained by the least-squares regression of y on x?