

## Homework 4: Due Wednesday, February 24

1. From the book:
  - (a) Question 3.4.1 (Table346 dataset is in sakai)
  - (b) Question 3.4.2
  - (c) Question 3.4.3
  - (d) Question 3.4.4
2. The question again uses the EXAM dataset that you saw in HW2. This is a hypothetical set of students' exam scores with the final exam score in column 1 and the midterm exam score in column 2.
  - (a) Fit a regression model with midterm score as a predictor and final score as a response. What are the fitted parameter values?
  - (b) Plot the residuals vs. the midterm scores and the standardized residuals vs. the midterm score. Based on these plots, would you say the model is a good fit? Explain why or why not.
  - (c) For a student who scores 70 on the midterm, what is the predicted score on the final? Assuming that the distributions are normal and that the standard deviations are the same for all students, what is the probability that this student scores more than 75 points on the final? (You may assume that the fitted regression model is exactly correct, but your answer should take account of the variability in individual scores as represented by the standard deviation of the residuals.)