(1) a. 14.23 Refer to Bottle return Problem 14.11. Use the groups given there to conduct a chi-square goodness of fit test of the appropriateness of logistic regression model (14.20). Control the risk of a Type I error at 0.01. State the alternatives, decision rule, and conclusion.

b. Why would it be reasonable to use a small $\alpha$ for the test in the preceding question? What would be your conclusion if using $\alpha = 0.05$?

(2) For the logistic regression of the Bottle return data in the preceding questions:

a. Obtain the studentized Pearson residuals and deviance residuals (in JMP you need to choose the ‘Generalized Linear Model’ personality). If your software will provide them (JMP won’t), also obtain the delta deviance statistics, Cook’s distance, and leverage (hat matrix diagonals, $h_{ii}$).

b. Make a scatter plot (or scatter plot matrix) of the statistics from part (a). How are these statistics related to each other?

c. Do these statistics show any unusual observations? If so, how do they relate to the goodness of fit test in (2) and to any discrepancies between the observed proportions and the fitted response function in (1)c of Homework # 8?

(3) 19.14

In 19.14 d., simply make the plot and interpret it; you do not need to calculate the correlation between the residuals and their normal scores, or conduct any other test of the null hypothesis of normality.

(4) 19.15