Stat 482 Homework Set #10

A company wishes to study the effects of three different types of promotions on sales of its crackers. For each store in the sample, the sales for the promotion period (y) and the sales for the preceeding period (x) are observed. The data is available from Table 22.1 on the course website. Response variable y is listed in the first column, continuous input x is listed in the second column, categorical input promotion type (1,2,3) is listed in the third column. The fourth column, the observation number, can be ignored.

1. Define indicator variables I_1 and I_2 using promotion type 3 as the baseline level.
2. Write an additive model for response y using continuous input variable x and indicator variables I_1, I_2.
3. Write a regression function for each of the promotion types.

4. Define predictor effect parameters as partial differences in means.
5. Provide an interpretation for each effect parameter, stated in the context of the problem.
6. Compute interval estimates for each of the effect parameters.

7. Create a scatterplot of the data with the estimated regression lines.