Problem 6

The file *stockton4.dat* contains data on 1,500 houses sold in Stockton, CA during 1996–1998. Variable descriptions are in the file *stockton4.def*.

(a) Estimate the following model

$$\begin{aligned}\ln(SPRICE) = {} & \beta_1 + \beta_2 LIVAREA + \beta_3 LIVAREA^2 + \beta_4 AGE + \beta_5 AGE^2 \\ & + \beta_6 BEDS + \beta_7 (LIVAREA \times BEDS) + \beta_8 (LIVAREA^2 \times BEDS) \\ & + \beta_9 (AGE \times BEDS) + \beta_{10} (AGE^2 \times BEDS) + e\end{aligned}$$

Report the estimated relationship between ln(*SPRICE*), *LIVAREA* and *AGE* for two-, three- and four-bedroom houses.

(b) Test the null hypothesis H_0:$\beta_6 = 0$, $\beta_8 = 0$, $\beta_9 = 0$, $\beta_{10} = 0$. Use $\alpha = 0.05$.

(c) Estimate the model implied by the test result in (b). Report the estimated relationship between ln(*SPRICE*), *LIVAREA* and *AGE* for two-, three- and four-bedroom houses.

(d) Which of the two models in parts (a) and (c) is favored by, (1) the AIC? (2) the SC?