**Applied Regression Analysis**

**Parameter Estimation Homework**

Problems:

1. The linear regression model can be written as . Describe what each term (represents, specify the dimensions of each term, indicate whether the term is made up of random variables or fixed/non-random values, indicate which terms we observe and which are not observed.

2. Suppose that are i.i.d. random variables with mean and variance (practically, this means , where has mean 0 and variance , with the ’s being independent of one another).  Using calculus, solve for the value of that minimizes the residual sum of squares and show that this estimator is an unbiased estimator for . Note that in this context, our objective function is .

From LMWR2, **Exercises 2.1**, **2.3**, **2.4**, **2.6 a-c**. For **2.1 a**, comment on whether it seems like is a meaningful description of model fit based on a plot of vs .

Recommended practice (don’t turn this in): 2.7