14.31 – Problem Set Two
Due: Tuesday, October 3
Note: Please be sure to read the information on the class web page about STATA. The data sets will be available on athena.

1. You have data on infant birth weight (B) and on the average number of cigarettes the mother smoked during pregnancy (C). You obtain

$$\hat{B} = 119.77 - 0.514C$$

i) What is predicted birth weight when C=0? What about when C=20 (one pack per day)? Comment on the difference.
ii) Does this simple regression necessarily capture a causal relationship between the child's birth weight and the mother's smoking habits? Explain.

2. Using data on houses sold you find that the following equation relates housing prices (P) to the distance from a recently built garbage incinerator (D):

$$\log(P) = 9.40 + 0.312 \log(D)$$

i) Interpret the coefficient on log(D). Is the sign of this estimate what you expect it to be?
ii) Do you think simple regression provides you with an unbiased estimator of what would happen to price with respect to distance from a garbage incinerator if I suddenly put a garbage incinerator in your neighborhood? (Think about the city's decision of where to put the incinerator.)

3. Suppose that you regress real wages on productivity and obtain

$$\hat{Y}_t = 16.89789 + 0.8254X_t$$
$$(3.3341) \quad (0.03475)$$

where standard errors are in parentheses.
a. Construct a confidence interval for the coefficient on X_t.
b. Is the coefficient on X_t equal to zero?
c. Is the coefficient on X_t equal to one?

4. From Berndt (Chapter 2), "The Capital Asset Pricing Model," Exercise 1 (pp. 43-44)

5. Berndt, Exercise 2 (pp. 44-45).

6. Berndt, Exercise 3 (pp. 45).