

1. (1.5pt) Answer Exercise 1 (b), page 155, assuming regression estimation. Also provide the equation of the regression model you propose and what the variables represent.
2. (1.5pt) Answer Exercise 1 (a), page 155, assuming regression estimation but with two regressors x_1 and x_2 . Also provide the equation of the regression model you propose and what the variables represent.
3. Read the description in Exercise 10, page 157, of the data set `cherry.dat`. This data is posted on the course web page. Using this data, find the following:

(a) (3pt) Fit the three regression models

$$\widehat{V} = \widehat{B}_0 + \widehat{B}_1 D \quad (1)$$

$$\widehat{V} = \widehat{B}_0 + \widehat{B}_2 H \quad (2)$$

$$\widehat{V} = \widehat{B}_0 + \widehat{B}_1 D + \widehat{B}_2 H \quad (3)$$

where V , D , and H are the volume, diameter, and height measurements.

- (b) (3pt) Assume $t_D = 41835$ inches, $t_H = 201756$ inches, and the population size $N = 2967$ trees. Answer 10(c) for each of the three models.
 - (c) (1pt) Compare models (1) and (2). Which do you consider the better model for estimating the total volume t_V ? Briefly justify your answer.
 - (d) (1.5pt) Compare model (3) to the model you selected in (b). Do you think including both variables provides an improved model for estimating the total volume t_V or does including both variables just lead to a more complicated model but with no real improvement? Justify your answer.
 - (e) (1.5pt) Provide an interpretation of the confidence interval generated using model (3) in the context of the study.
4. (2pt) For stat grad students only: Exercise 26, page 161.
 5. (2pt) For stat grad students only: Exercise 27, page 161. You will need to verify both equalities.