Stat 302: Assignment 3

Fall 2022

Due on Tue Nov 8th, 2022 by 11.59 pm

Important Information:

1. You must submit your assignment on time. Failure to do so results in an assignment grade of zero.
2. The assignment questions correspond to the 2nd edition of the textbook STAT2: *Modeling with Regression and ANOVA*. If you are using some earlier edition, it is your responsibility that you answer the intended questions.
3. There are 4 questions. Answer all questions.

Q1: 3.38

Q2: 4.7 (a,b and c)

Q3: 4.8

Q4: 4.16

4.16 Caterpillar nitrogen assimilation and body mass. In Exercise 1.30 on page 54, we explored the relationship between nitrogen assimilation and body mass (both on log scales) for data on a sample of caterpillars in **Caterpillars**. The *Instar* variable in the data codes different stages (1 to 5) of caterpillar development.

Caterp

a. Fit a model to predict log nitrogen assimilation (*LogNassim*) using log body mass (*LogMass*). Report the value of R^2 for this model.

b. Fit a model to predict *LogNassim* using appropriate indicators for the categories of *Instar*. Report the value of R^2 for this model and compare it to the model based on *LogMass*.

c. Give an interpretation (in context) for the first two coefficients of the fitted model in (b).

d. Fit a model to predict *LogNassim* using *LogMass* and appropriate indicators for *Instar*. Report the value of R^2 and compare it to the earlier models.

e. Is the *LogMass* variable really needed in the model of part (d)? Indicate how you make this decision with a formal test.

f. Are the indicators for *Instar* as a group really needed in the model of part (d)? Indicate how you make this decision with a formal test.