Christopher Meng STAT021-Section 1 Test 2 Corrections

(4) I correctly identified that the problem was asking about data points that are unusual as identified by studentized residual values with a magnitude greater than 2. In the testing frenzy, I correctly answered (a) observation 66, but I missed (b) observation 65 and (d) observation 53. a, b, and d are the correct answers those points lay beyond the heavy-dashed, green line, indicating their studentized residuals are of greater magnitude than 3.

(7b) During the exam, I was considering saying that the tests were equally reliable because I didn't learn any info from the 3 models, their residual plots, or normal quantile plots that suggested otherwise. However, the wording of the question encouraged me to pick one test, so I correctly guessed that the overall F-test was more reliable than the Nested F-test, but for the wrong reasons. I now know that we have to check the regression assumptions for the reduced and full models that we are examining w/ the F-test. The full interaction model appears to meet all of the regression assumptions, However, the reduced model for the nested F-test simplifies to model 1. In model 1's residual plot, we can identify a slight curved pattern that indicates a violation of the linearity assumption. The violation of this assumption suggests that the nested F-test may be less reliable. Ideally, I would want to check the assumptions for the reduced, no-intercept model for the overall F-test. However, I know that, because the residuals for a no-intercept model would be $y_i - \bar{y}$, the residuals are simply being centered around 0, and it's more likely that the overall F-test will be more reliable as both the full and reduced models more likely meet the regression assumptions.