Malavika Eby 4/21

STAT 21 Test 2 Corrections

(2) B, C

(3) B, C, D

(7) We can likely regard the test in 7a to be more reliable than that from 6b. In 6b, the ANOVA F-test for all predictors tests whether at least one predictor out of all 3 is significant. Our model assumptions of independence, normality & constant variance are applied <u>widely</u> to the variables of weight, transmission type, & their combined interaction term. For this test, if weight has a non-zero coefficient but transmission type does not, the general F-test will still indicate a linear association between the predictors & mileage → the resulting conclusion cannot be specific & is based on the assumption that all ~~variables~~ <u>pred. var. data</u> follow our 3 assumptions. In our residual plot for Model 3, we

can detect a potentially parabolic figure in the residuals facing downward. This pattern suggests a violation of the independence condition. Additionally, the normal quant. plot indicates a wide wave like pattern repeating 3x across the regression line of the quantile plot, suggesting a potential violation of the normality assumption. On the other hand, the Nested f-test in 7a is not required to meet the regression assumptions. Also, its results are useful because it will tell us specifically if transmission type has a linear association with/ significant effect on mileage.