

$$1. \left| \frac{\beta_{pH}}{\text{std error}_{pH}} \right| \sim 10$$

$$\left| \frac{\beta_K}{\text{std error}_K} \right| \sim 5$$

10 > 5 so effect of changing pH is greater than changing K

★ a) is also correct.

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7b) There is 6 requirement for MLR & F-test.

- 1) Zero Mean
- 2) Linearity
- 3) Constant Variance
- 4) Independence
- 5) Randomness
- 6) Normality

These requirement are met for both model 3 & 1 by looking at their residual & q-q plots. The spread seems constant & the residual seems to align themselves along theoretical line.

Thus, the two tests in 6b & 7a are equally reliable.

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8.) 1) Do added variable plot to see whether the new predictor can explain variance in the error of old model.

2) Do a Mallows'  $C_p$  comparison between the full-model (with all predictors that we have) & reduced model that only have the already used predictors & the one new one that we want to add. If  $C_p$  of the reduce model is smaller than  $m+1$  where  $m$  is number of predictors used, it is worth looking at the model.

3.) Calculating the adjusted R-square of the model to see if it is closer to 1 than the old model. If it is closer, it is worth considering/analysing the new model with the new predictor.