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Week 8 Reading Questions

I did not work on these with anyone

- **Q1 (1 pt.):** Describe the key difference between the non parametric model (Ch. 7.1) and the parametric model (Ch. 8.1)

The key difference between the nonparametric and the parametric model is that the parametric model you have to account for error when building the model. That is to say, you have to specify the error component, whereas in the nonparametric model, you do not have to specify the error, even though it exists.

- **Q2 (1 pt.):** What is the difference between interpolation and extrapolation?

Interpolation is to take two "endpoints" or values of information that we already possess and use them to infer that another data point might fall more or less directly between the two, such as on a line graph. Extrapolation is using the existing data points to extend the line and infer where further points might fall, outside of the data points already known.

- **Q3 (1 pt.):** Explain why extrapolation has more pitfalls than interpolation.

Extrapolation has more pitfalls because it is assuming no change in the behavior of the data points. An extreme example could be that you extrapolate that because your data points appear to be linear, you assume it stays linear all the way but it actually follows a polynomial curve, completely changing directions with additional data points. A less extreme example would be assuming linearity from the existing data points, but it actually forms a logarithmic curve as you proceed along the x-axis, plateauing off, causing your inferences to be completely wrong. This pitfall isn't shared by interpolation, unless perhaps in a very extreme example or with very heavily spaced out data points, because if you have multiple data points you can fairly accurately say what happens between them.