

# Stat 346 Homework 2

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## 1 Problem 1

### 1.1 Part a

The residuals are not normally distributed, indicating a nonlinear relationship. Possible fixes include non-linear regression or a transformation on X.

### 1.2 Part b

These residuals seem to be normally distributed with constant variance. This indicates that the model is a good fit.

### 1.3 Part c

The errors are not normally distributed. This might be fixed with a transformation on Y.

### 1.4 Part d

The variance on the residuals is not constant. This might be fixed with a transformation on Y.

## 2 Problem 2

### 2.1 Part a

The residuals seem normally distributed and support a linear trend.

### 2.2 Part b

## 3 Problem 3

## 4 Problem 4

## 5 Problem 5, KNN #3.23

Full Model:

$$Y_{ij} = \mu_j + \epsilon_{ij} \quad (1)$$

Degrees of freedom:  $n - c$

Reduced Model:

$$Y_{ij} = \beta_1 X_j + \epsilon_{ij} \quad (2)$$

Degrees of freedom:  $n - 2$