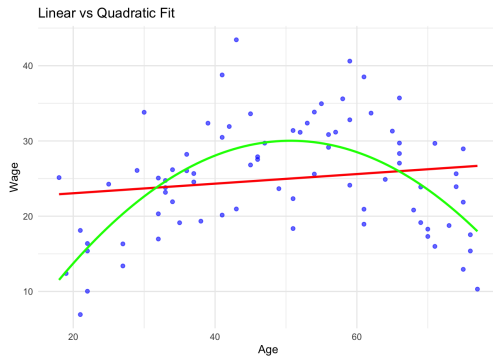Part 1

1. Plot Wage against Age and evaluate whether a linear or quadratic model would better capture the relationship.

Linear vs Quadratic Fit

The quadratic model would better capture the relationship.

2. Estimate a multiple regression model of Wage using Age and Education as independent (X) variables; assume a standard linear relationship between Wage and Age.

Wage vs Age by Education Level
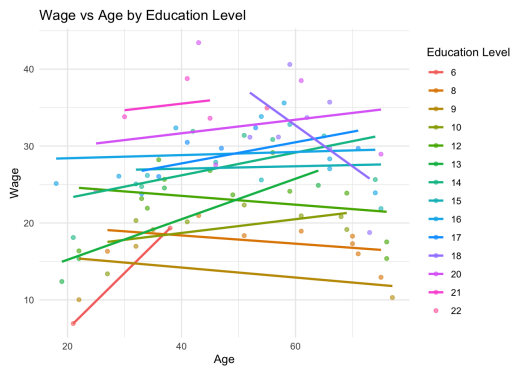
3. Estimate another multiple regression model of Wage using Age and Education as independent (X) variables; this time fit Age using a quadratic relationship. Verify your choice from part a. by comparing the distribution of residuals and the goodness of fit between the models in parts b and c.

Quadratic Wage vs Age Relationship
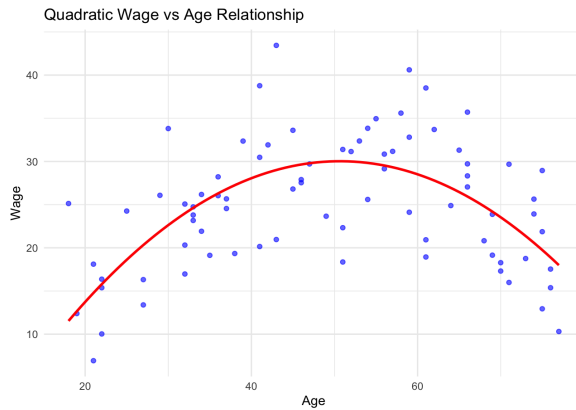
The second multiple regression model fits better with the use of a quadratic relationship.

4. Use the appropriate model to predict hourly wages for someone with 16 years of education and age equal 30, 50, or 70.
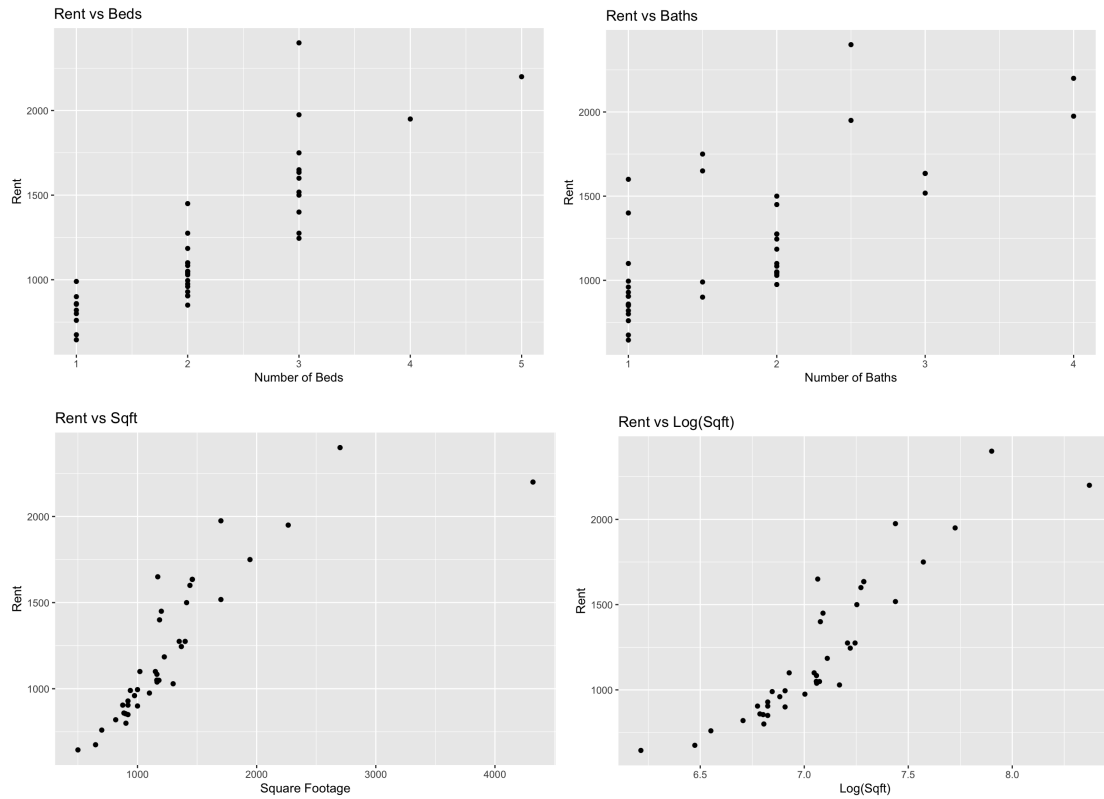
30- $25.85

50- $31.54

70- $26.56

5. According to the model, at what age will someone with 16 years of education attain the highest wages?

50.66904

Part 2

1. Plot Rent against each of the three predictor variables and evaluate whether the relationship is best captured by a line or a curve. Identify variables that may benefit from a log-transformation.

Square footage is the best candidate for a log-transformation.

2. Estimate a multiple regression model (with any appropriate log-transformations) to predict rent for a 1,600-square-foot rental with 3 bedrooms and 2 bathrooms.

$1540.38