Polynomial Regression 101

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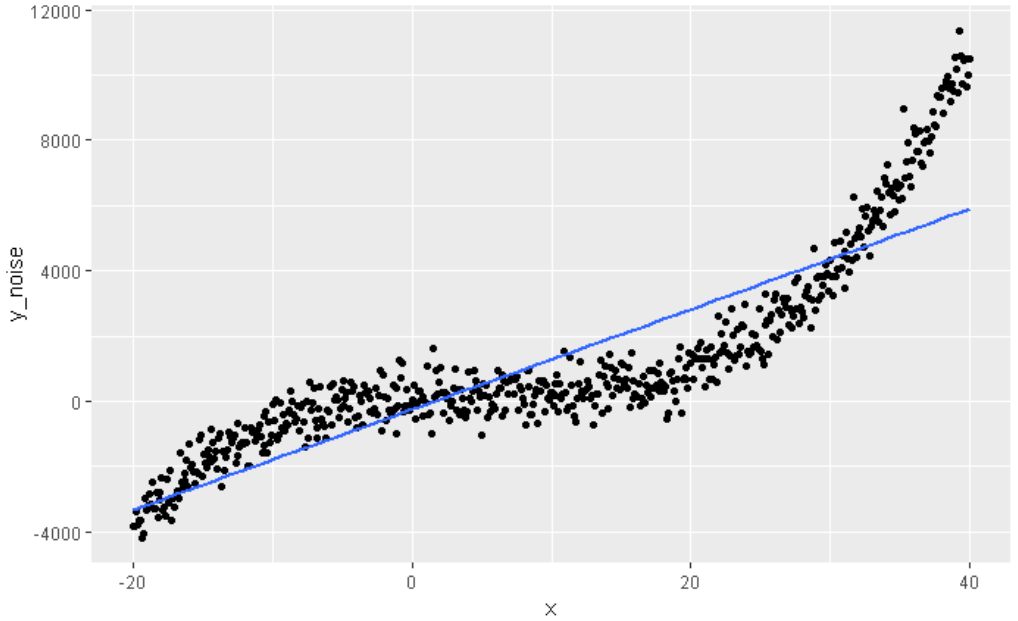
Polynomial Regression

Linear Model

- Data is non-linear (3rd order polynom)
- Linear regression does not cover complexity of data

→ Underfitting!



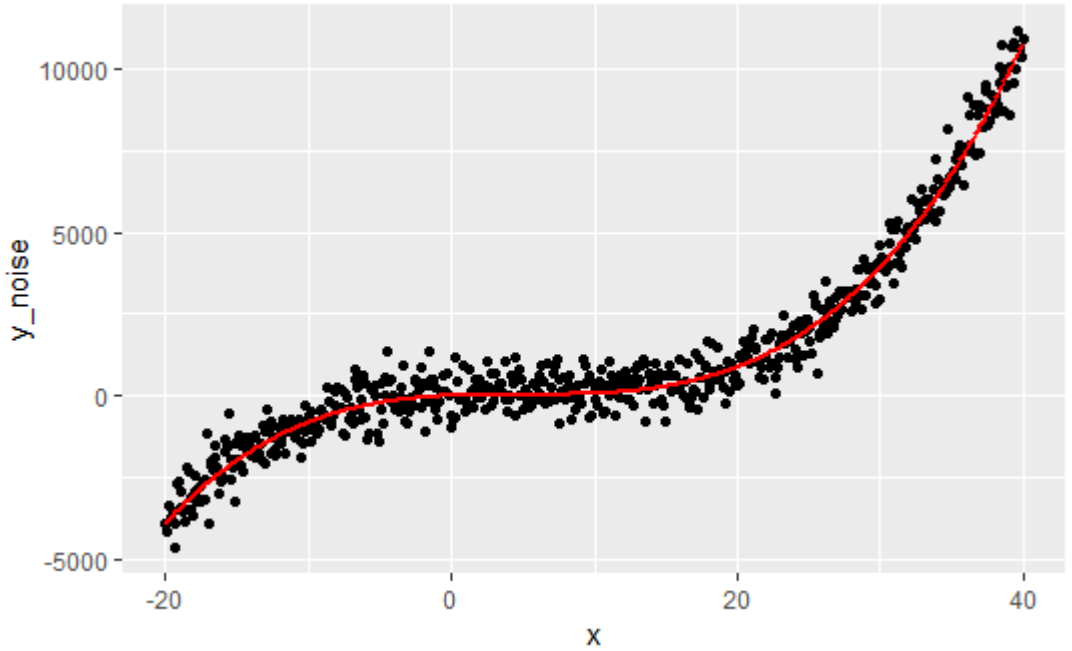
Polynomial Regression

Polynomial Fit

- Used when relationship non-linear
- Can estimate a polynomial fit of higher-order
- User needs to define order

- $y = b + m_1 x^1 + m_2 x^2 + m_3 x^3$

- Sidenote: polynomial regression still type of linear regression (x^2 is just feature and m_2 a linear parameter)



Polynomial Regression

Too High-Order Fit

- „The more, the better“???
- $b + m_1 x^1 + m_2 x^2 + \ldots + m_N x^N$
- N >> than best fit
- Model covers noise rather than only general shape of data

→ Overfitting!