

What is it:

- “a form of Linear regression where only due to the Non-linear relationship between dependent and independent variables”
 - <https://www.analyticsvidhya.com/blog/2021/07/all-you-need-to-know-about-polynomial-regression/#:~:text=Polynomial%20regression%20is%20a%20form.convert%20it%20into%20Polynomial%20regression.>
- Used for non-linear data
- Equation
 - $y = a_0 + a_1x_1 + a_2x_2 + \dots + a_nx_n$
 - x independent data
 - y dependent data

[Polynomial Regression Video](#)

The coefficients are all linear! This is a standard linear model!

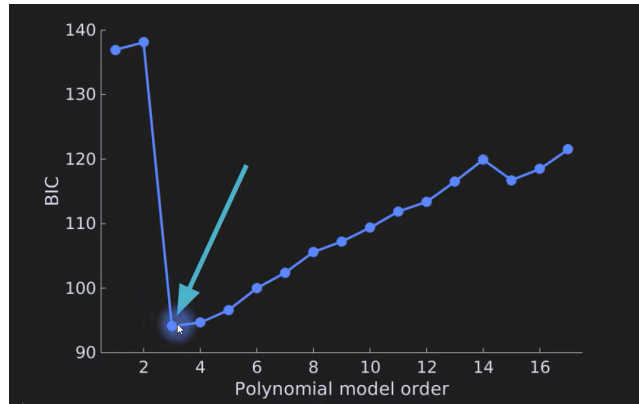
$$y = \beta_0x^0 + \beta_1x^1 + \dots + \beta_kx^k + \epsilon$$

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- How to figure out model order

Model order selection, thanks to Bayes

$$\text{BIC}_k = n \log(\text{SS}_\epsilon) + k \log(n)$$

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- n
 - Number of data points
- SS_ϵ
 - Sum of squared residuals
- k
 - Number of parameters



- The minimum value is the polynomial model we want