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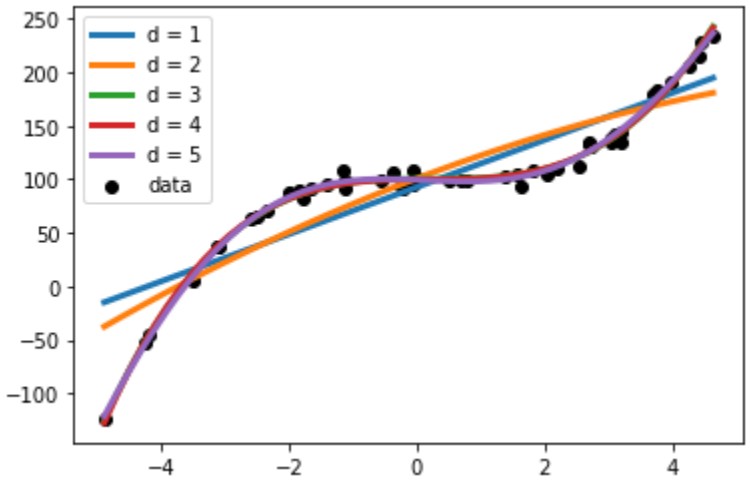
Problem1 Writeup

Estimated Functions:

$y_1 = 21.992x + 92.705$
$y_2 = -1.158x^2 + 22.608x + 100.799$
$y_3 = 1.667x^3 + -1.193x^2 + 0.396x + 100.437$
$y_4 = -0.014x^4 + 1.668x^3 + -0.906x^2 + 0.339x + 99.762$
$y_5 = -0.023x^5 + -0.020x^4 + 2.274x^3 + -0.864x^2 + -2.660x + 99.414$

Data Visualization:



The data seems to best follow a third order polynomial (ie a cubic function) which can be seen from the low error between the estimated regression function, y3(x), y4(x), y5(x), and the data in the plot above.
To make sure that we do not overfit the data points, we use y3(x) as our model.
If we measured a new data point, x = 2, the corresponding predicted value would be y3(2) = 109.793