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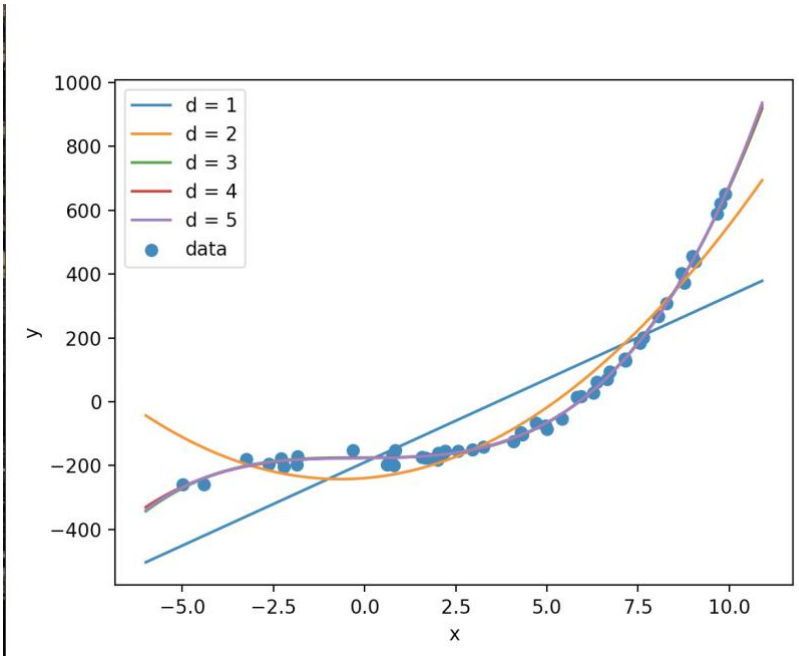
Dr. Inouye
Problem1_writeup
Problem 1

2.

$d = 1;\ y(x) = 52.158x\ - 189.866$
$d = 2;\ y(x) = 7.001x^2 + 9.3038x\ - 239.334$
$d = 3;\ y(x) = 0.8201x^3 + 0.261x^2 -\ 0.010x\ - 175.277$
$d = 4;\ y(x) = 0.00598x^4 + 0.755x^3 + 0.2345x^2 + 1.1763x\ - 175.88$
$d = 5;\ y(x) = 0.000853x^5 - 0.00469x^4 + 0.7528x^3 + 0.526x^2 + 0.9659x\ - 176.837$

3.



The degree model that follows the data most closely is greater than a degree of 2. All other models are almost indistinguishable, but to overcome overfitting, it is best to use the lowest degree for the most generalizability. Therefore, the best degree model would be degree 3.

4.

The predicted value based on the degree 3 model with an x value of 2 is equal to -167.689614066.