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**Problem 1.**

**(1) Estimated Functions:**

(Write numerical values for and )

[np.float64(27.406798636142433), np.float64(76.54862254204514)]

[np.float64(-1.2648866448486864), np.float64(27.027736669039708), np.float64(88.44135382520402)]

[np.float64(1.7623831939447872), np.float64(-1.368257266230858), np.float64(-0.6498400559682587), np.float64(101.1643665365012)]

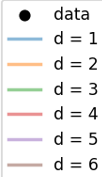
[np.float64(-0.022514493706441763), np.float64(1.7558870976971808), np.float64(-0.8882893402084635), np.float64(-0.651881085288025), np.float64(99.92393813058682)]

[np.float64(0.005007633185101307), np.float64(-0.020435144478005096), np.float64(1.614518486029466), np.float64(-0.8993207004894201), np.float64(0.1705612875644274), np.float64(99.7076810284181)]

[np.float64(0.004056621447540695), np.float64(0.005285210041176304), np.float64(-0.16206024287976317), np.float64(1.6376473758416836), np.float64(0.33538593987024745), np.float64(-0.23809253411232056), np.float64(98.30732978191577)]

**(2) Data Visualization:**

*(Insert plot obtained from data in poly.txt. Note that the plot below is not the solution)*

**A graph of a graph with colored lines and numbers

AI-generated content may be incorrect.**

**(3) What degree polynomial does the relationship seem to follow? Please explain your answer.**

Sample answer:

I think the degree of 3 is the best, because it is not very complex, and it pretty much matches the actual data.

**(4) If we measured a new data point, what would be the predicted value of , based on the polynomial identified as the best fit in Question (3)?**

Sample answer: predicted value is 189.717

**Problem 2.**

**(1) Plot the mean squared error as a function of lambda in Ridge Regression:**

*(Insert plot obtained by completing the* ***main*** *function. Note that the plot below is not the solution)*

A graph of a normal distribution

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**(2) Find best lambda:**

Sample answer: *(insert numerical values for c and d)*

Based on the range of Lambda values tested, the best lambda value is 0.1, which yields an MSE of 1.9815144074864866 as shown on the plot above.

**(3) Find equation of the best fitted model:**

(*Insert numerical values for ’s and )*

[-4.33992630e-01 8.16204762e-01 5.19495066e-01 3.83342192e+00

2.11359089e-01 4.53719310e-04]

**(4) Plot the predicted stock prices and actual stock prices using Google data**

*(Note that the plot below is not the solution)*

A graph with orange lines and numbers

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