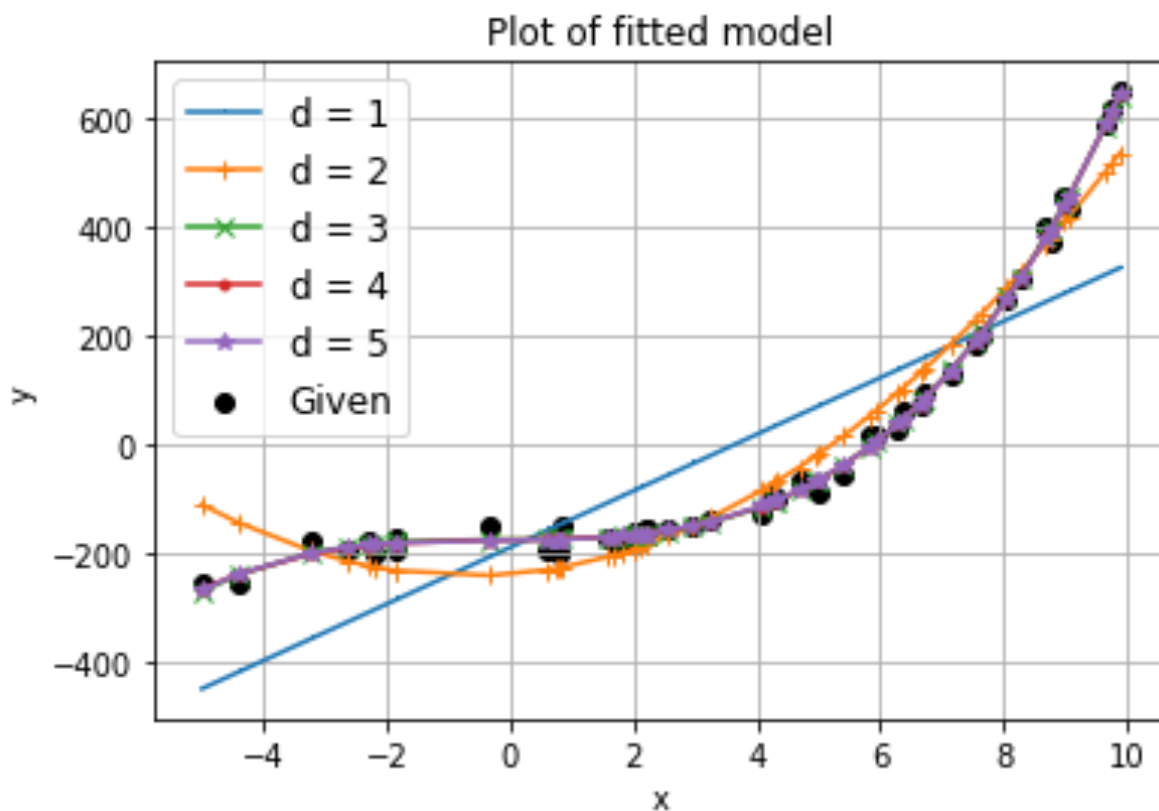## PROBLEM 1 Q2

The resulting estimated functions are:
- $y_1(x) = x^1 52.158 + -189.866$
- $y_2(x) = x^2 7.001 + x^1 9.304 + -239.334$
- $y_3(x) = x^3 0.820 + x^2 0.261 + -x^1 0.0103 + - 175.277$
- $y_4(x) = x^4 0.005987 + x^3 0.755 + x^2 0.234 + x^1 1.176 + -175.880$
- $y_5(x) = x^5 0.000853 + -x^4 0.004698 + x^3 0.7528 + x^2 0.5260 + x^1 0.9659 + -176.837$

PROBLEM 1 Q3

Based on the mean squared error,
MSE for d = 1 is 2471895.407024308
MSE for d = 2 is 1755375.1906050246
MSE for d = 3 is 1347509.4840200478
MSE for d = 4 is 1078219.4383608005
MSE for d = 5 is 898513.3126327494T
The function seems to follow the polynomial d=5, which has the lowest Mean Squared Error

PROBLEM 1 Q4

y_pred if x = 2 and d = 3 is -166.82657455772826