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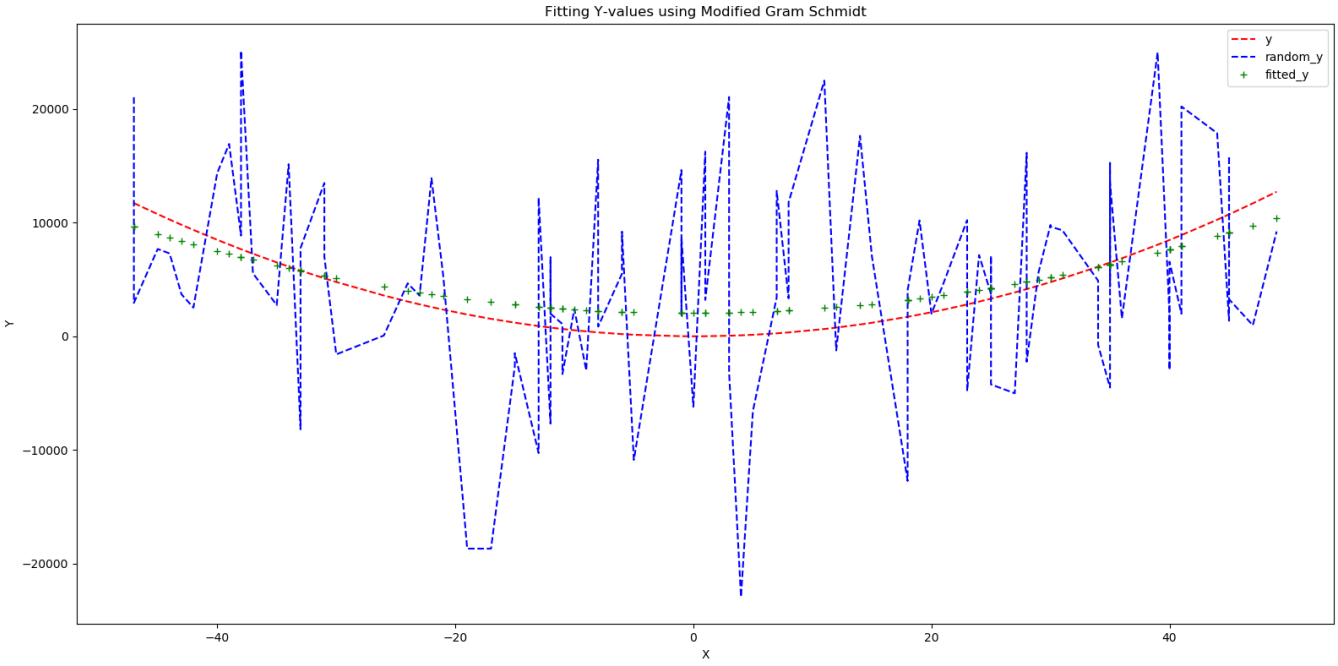
11/21/18
EECE 7220

HW 4: Fitting Y-values using various techniques with sigma = 10,000.

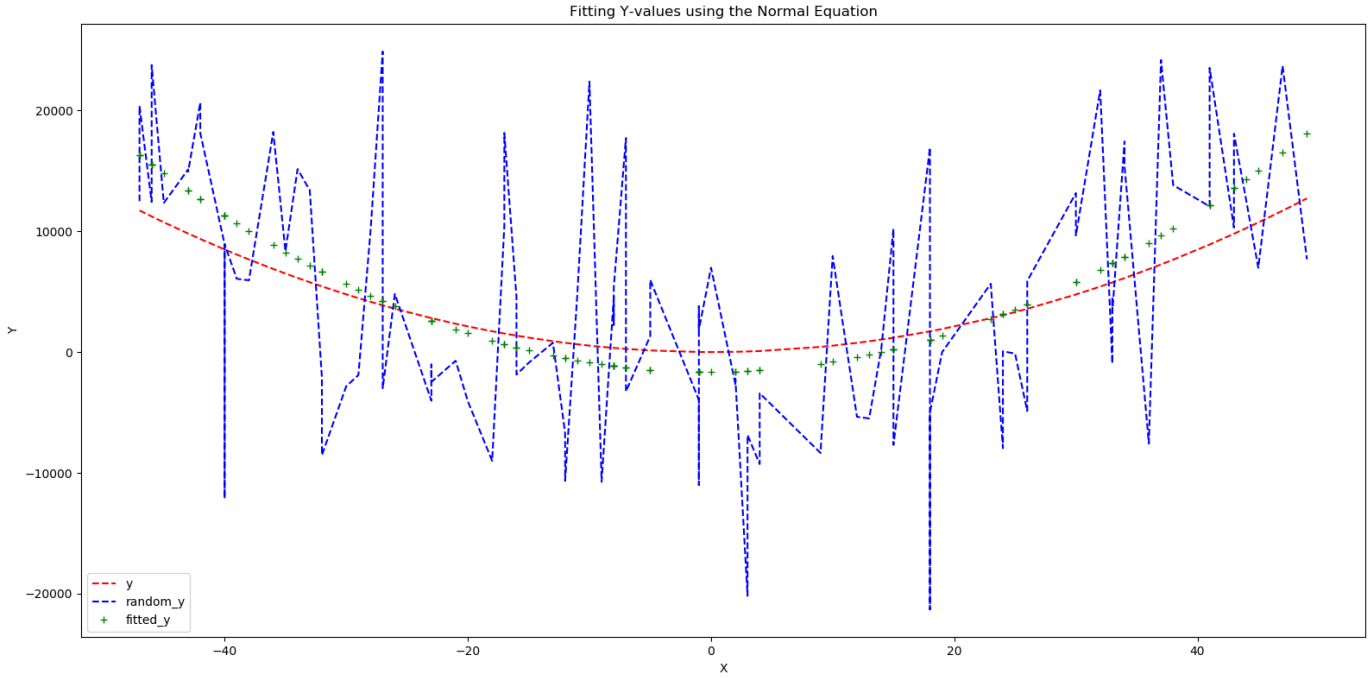
Q1:



Betas: [[1075.73347559] [-15.85284368] [4.72055966]]

As expected, the random Y-values (random_y) are very volatile from one observation to the next. Therefore, we generate the fitted Y-values using the Modified Gram Schmidt algorithm which has mitigated the randomness inherent to each observation as to minimize the distance between each observation and the fitted curve.

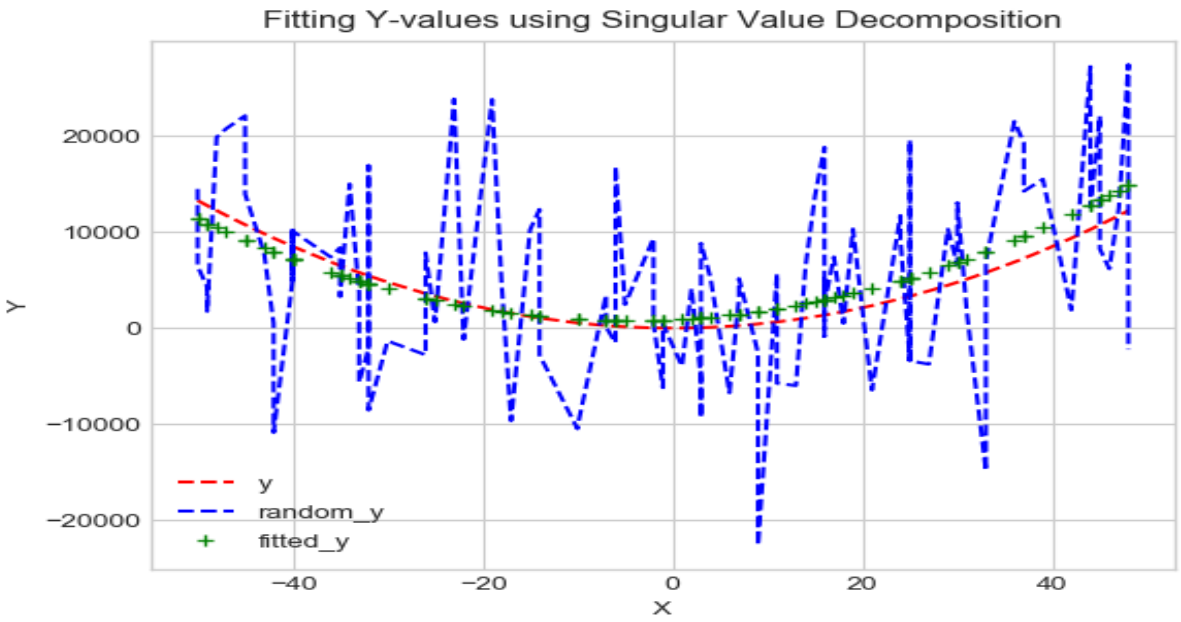
Q2:



Betas: [[1362.29] [-12.109] [4.318]]

As expected, the random Y-values (random_y) are very volatile from one observation to the next. Therefore, we generate the fitted Y-values using the Normal Equation which has mitigated the randomness inherent to each observation as to minimize the distance between each observation and the fitted curve.

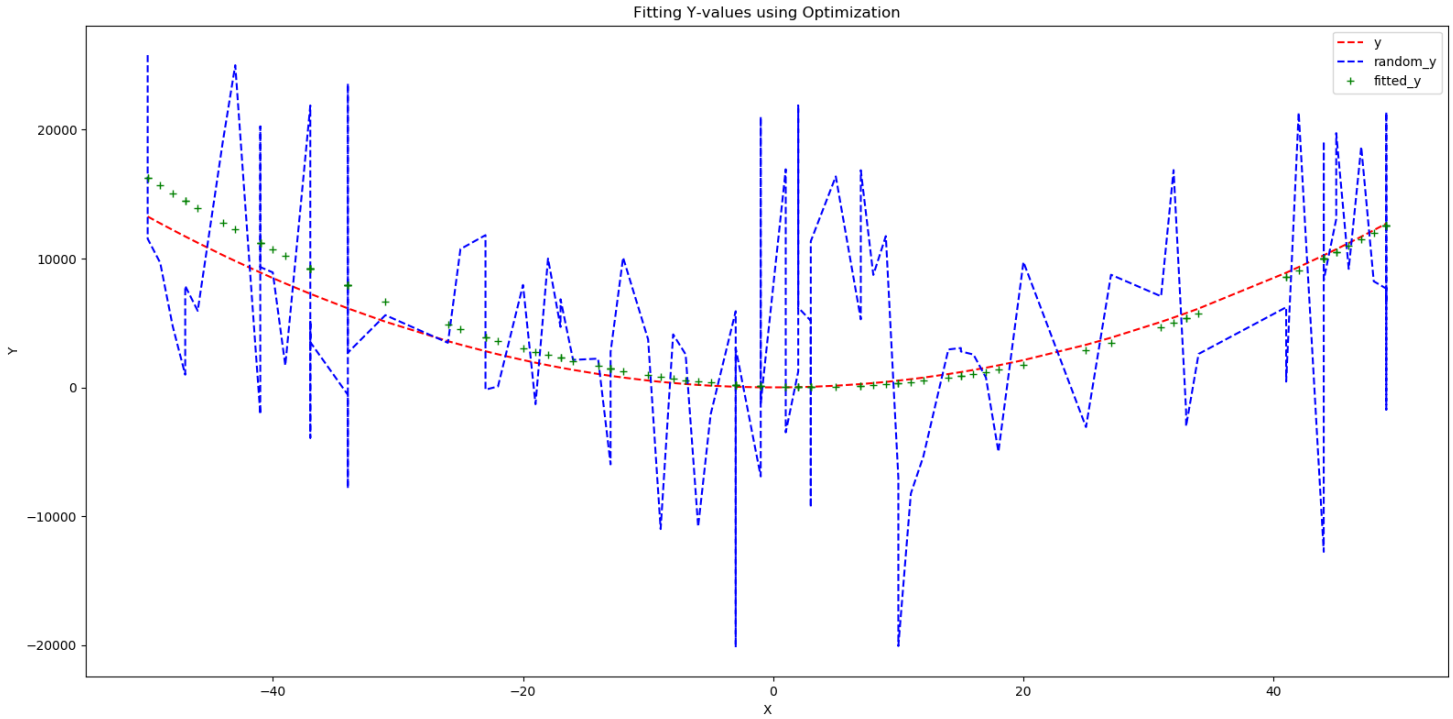
Q3:



Betas: [[1613.0448771] [39.77033235] [3.98253248]]

As expected, the random Y-values (random_y) are very volatile from one observation to the next. Therefore, we generate the fitted Y-values using the Singular Value Decomposition algorithm which has mitigated the randomness inherent to each observation as to minimize the distance between each observation and the fitted curve.

Q4:



Betas: [[59.442] [-31.889] [5.95]]

As expected, the random Y-values (random_y) are very volatile from one observation to the next. Therefore, we generate the fitted Y-values using the built-in Optimization algorithm, scipy.optimize.fmin(), which has mitigated the randomness inherent to each observation as to minimize the distance between each observation and the fitted curve.