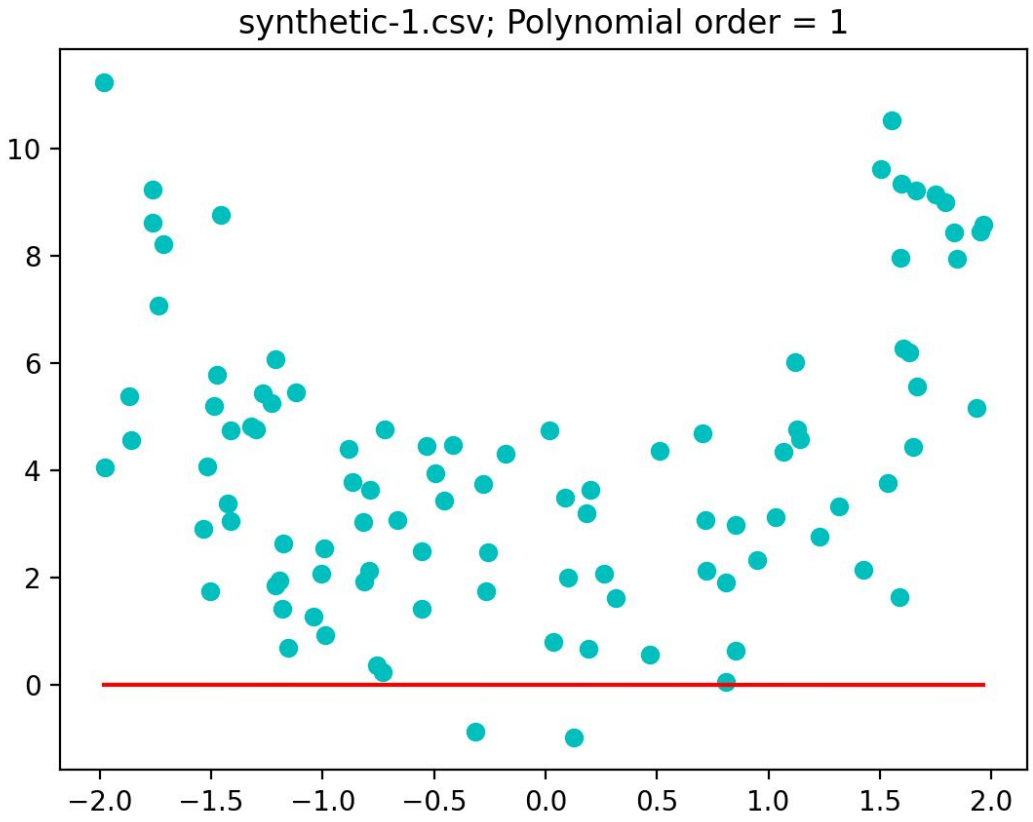
Polynomial Regression through Gradient Descent Report
Will Taylor

For every dataset, my hyperparameters were as as follows:
> All thetas started at 0
> My learning rate, alpha, was 0.00001
> My number of iterations was 1500

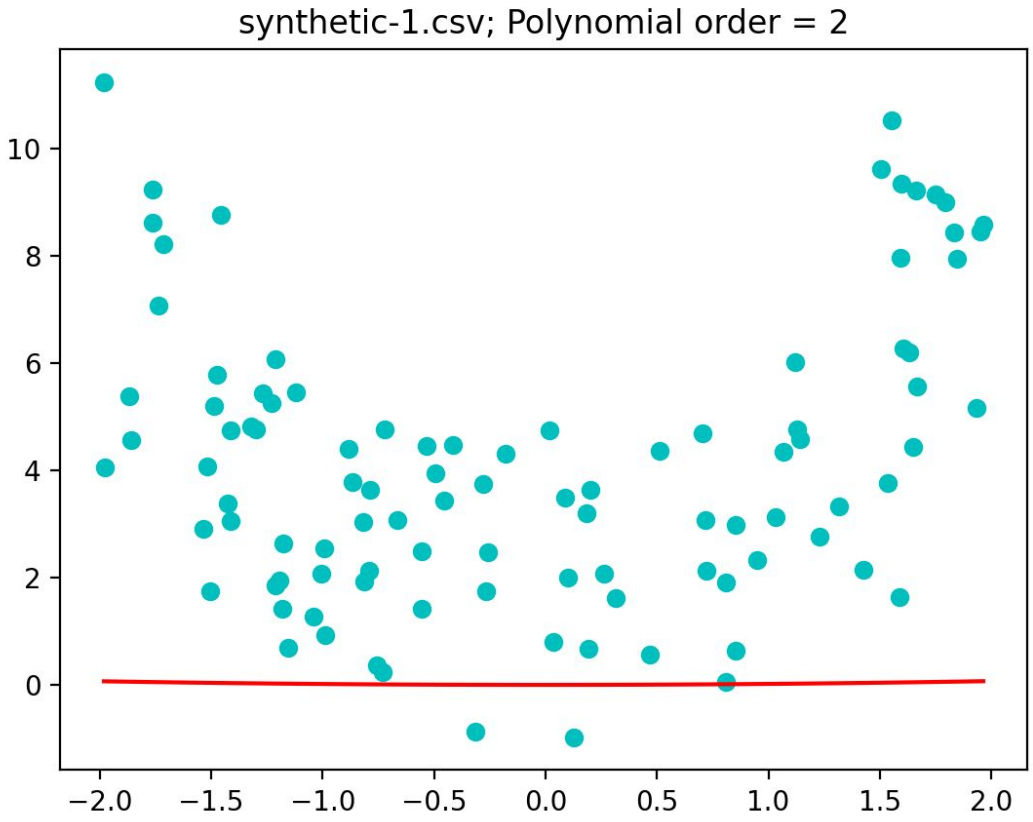
I'm using full batch gradient descent

I put the order of the polynomial next to the dataset name on each plot, for clarity.

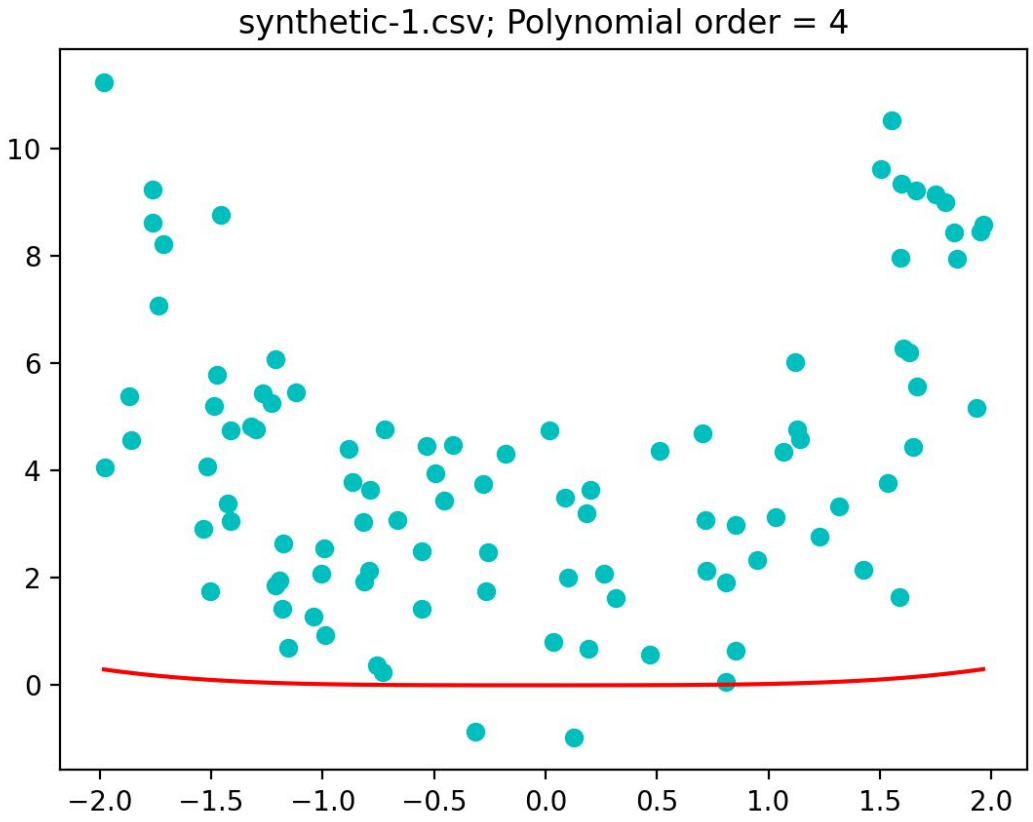
I did not attempt the bonus section.



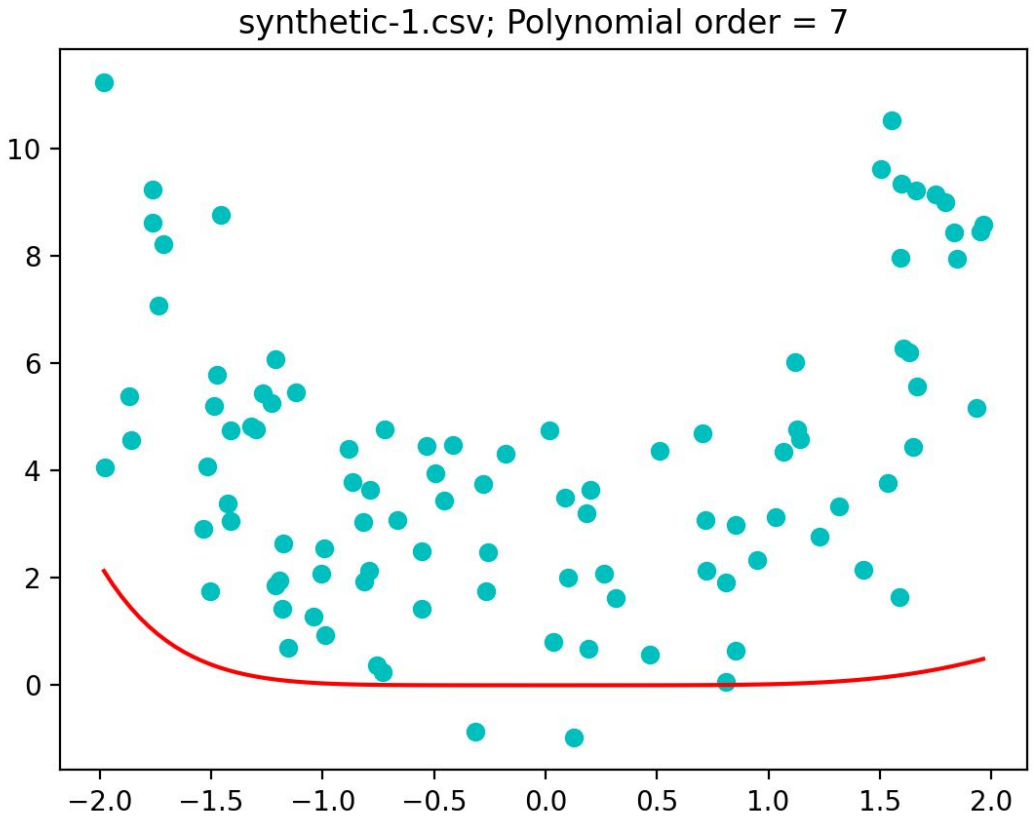
MSE = 24.458900413272165
Thetas = [0.007001847859988573, -0.00047785270523838843]



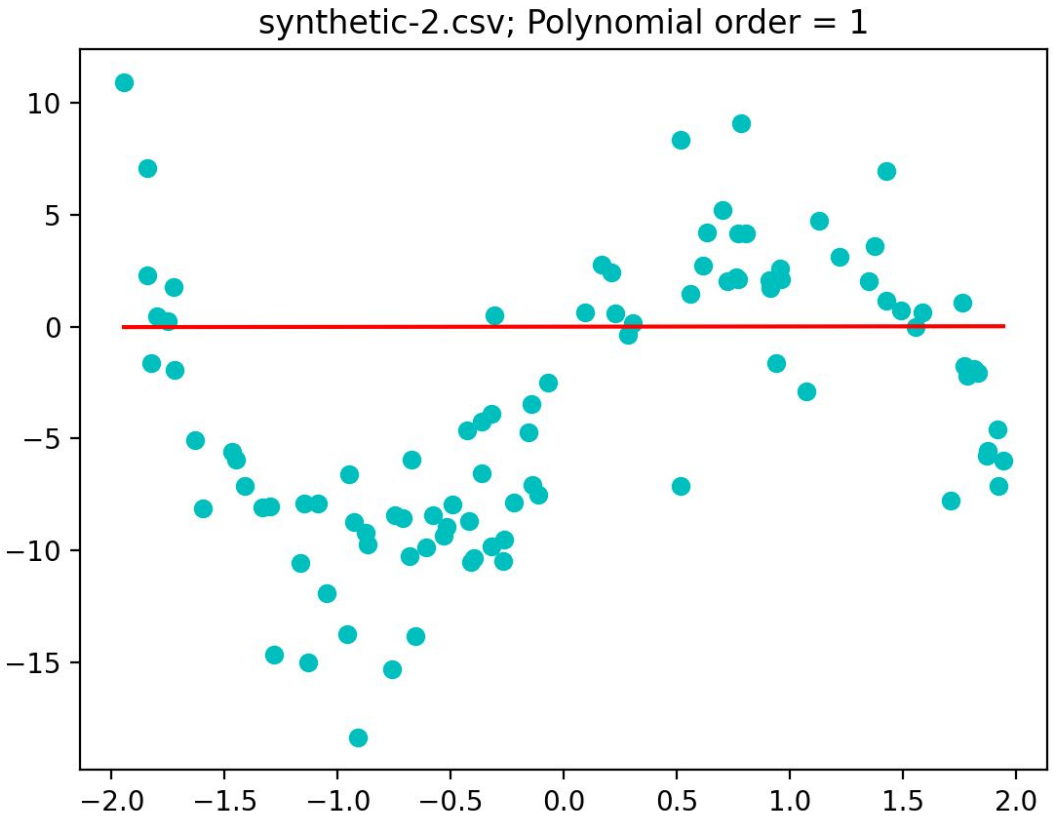
MSE = 24.181950442046315
Thetas = [0.0060744945298261774, 0.0008082278951444044, 0.017361429251472 38]



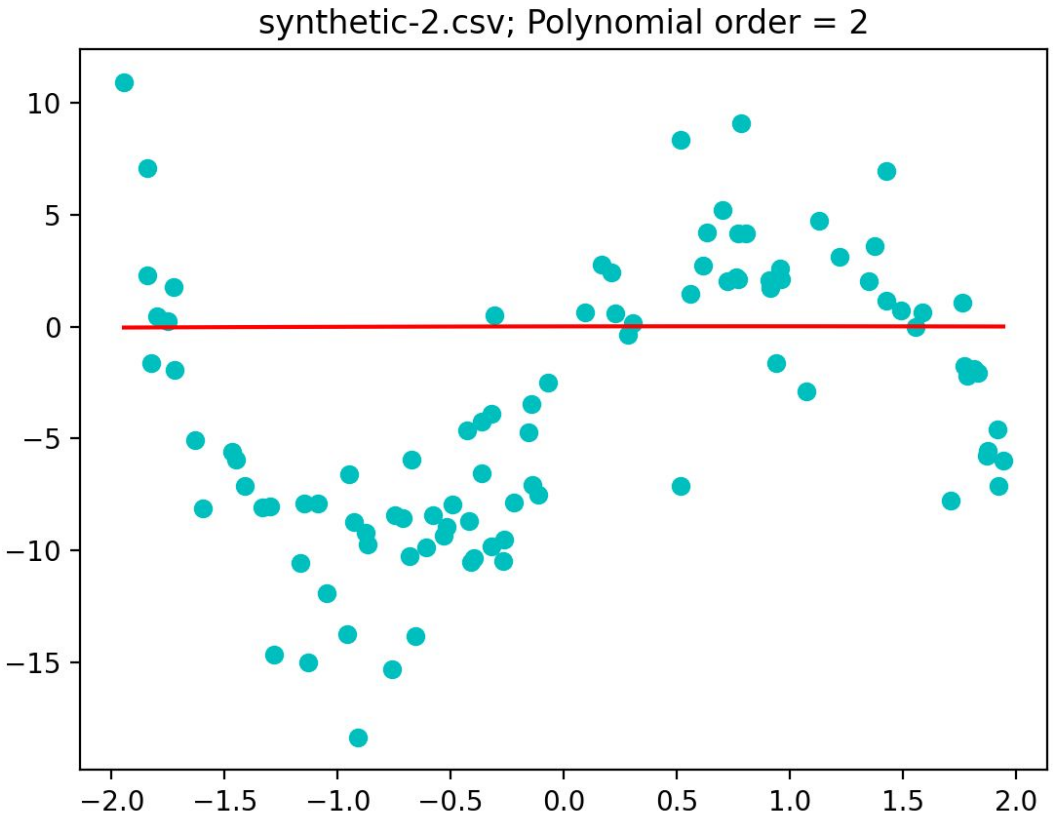
MSE = 23.63959390794064
Thetas = [-0.000835563984542819, 0.0008992238043937833, 0.003961647342192257, 0.0007760103955301961, 0.018630462137766937]



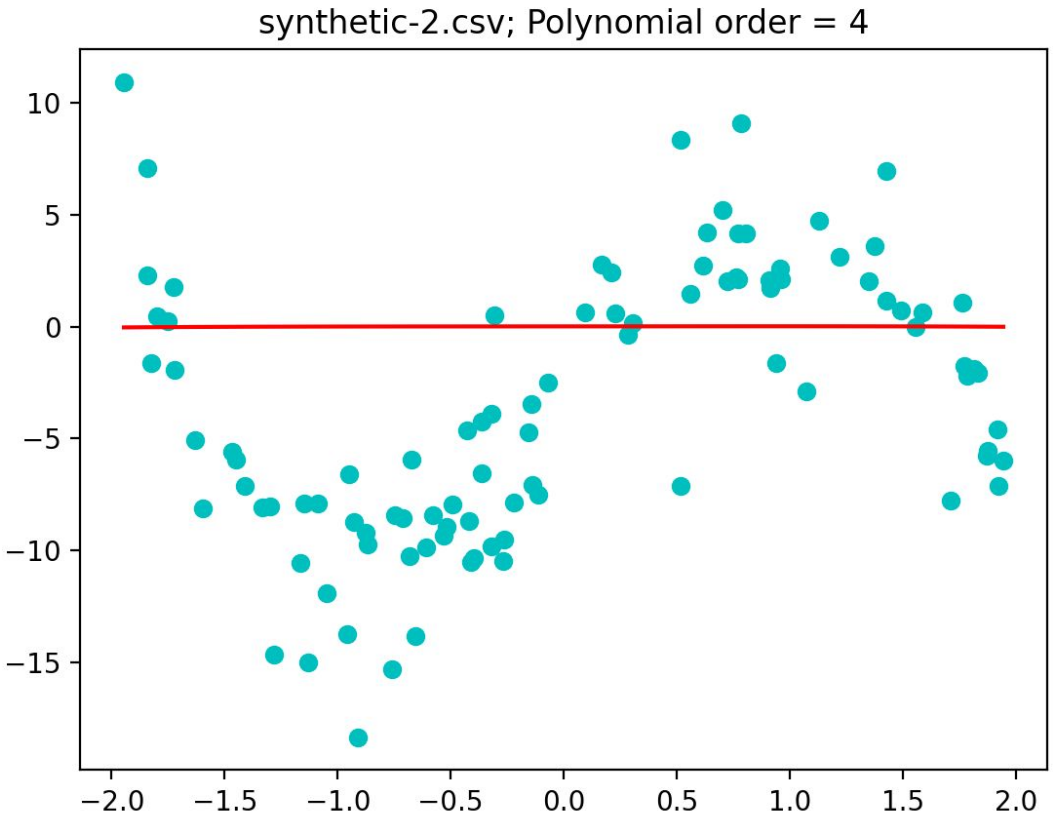
MSE = 21.97927590264057
Thetas = [-0.0011002531182765913, -6.36360228168548e-05, 0.0006089459314936678, -9.797652453804367e-05, 0.005992261845995824, -0.0021332339943890273, 0.020290490458636855, -0.006232404053467266]



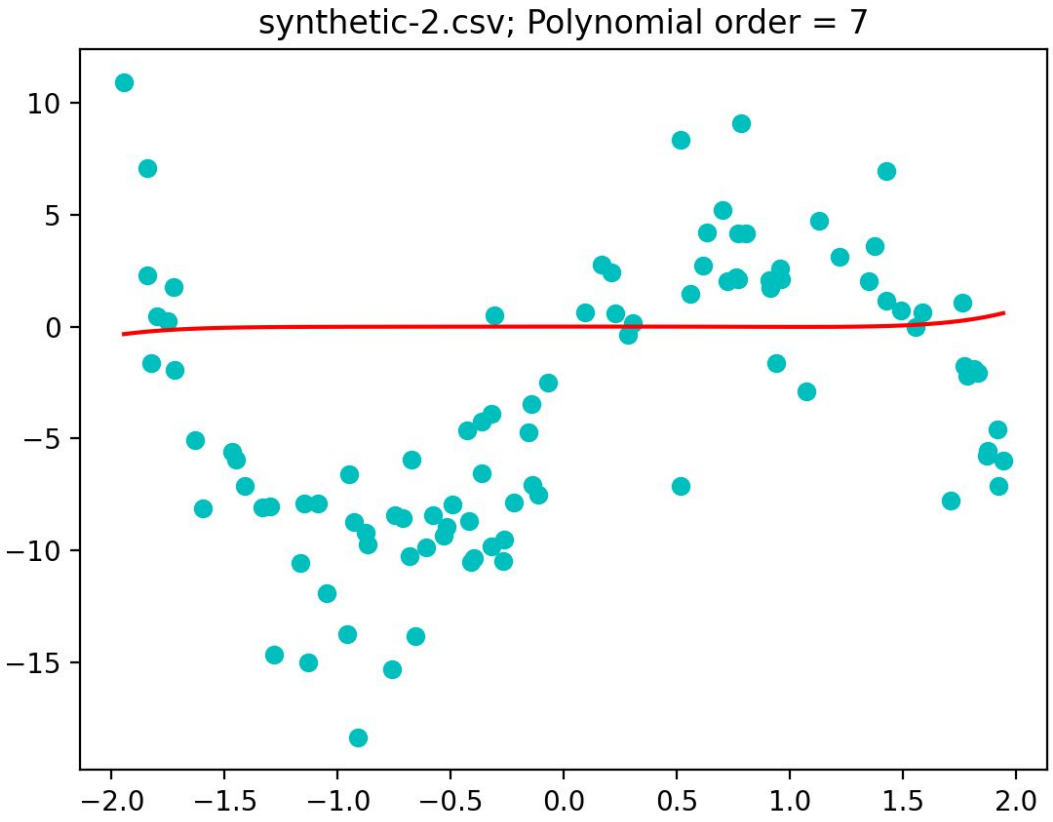
MSE = 49.087645682380185
Thetas = [-0.0067059381805581394, 0.009964406362038793]



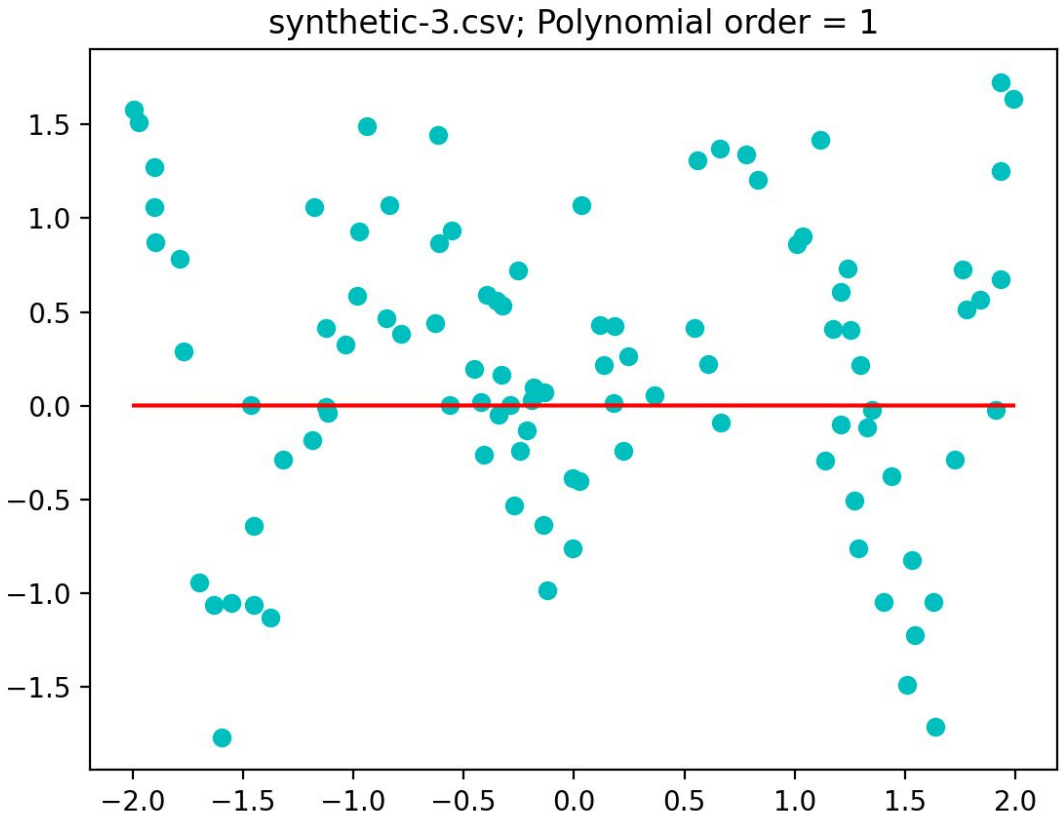
MSE = 49.1207914422961
Thetas = [0.0061635586295819495, 0.011973045462222335, -0.007503341944633241]



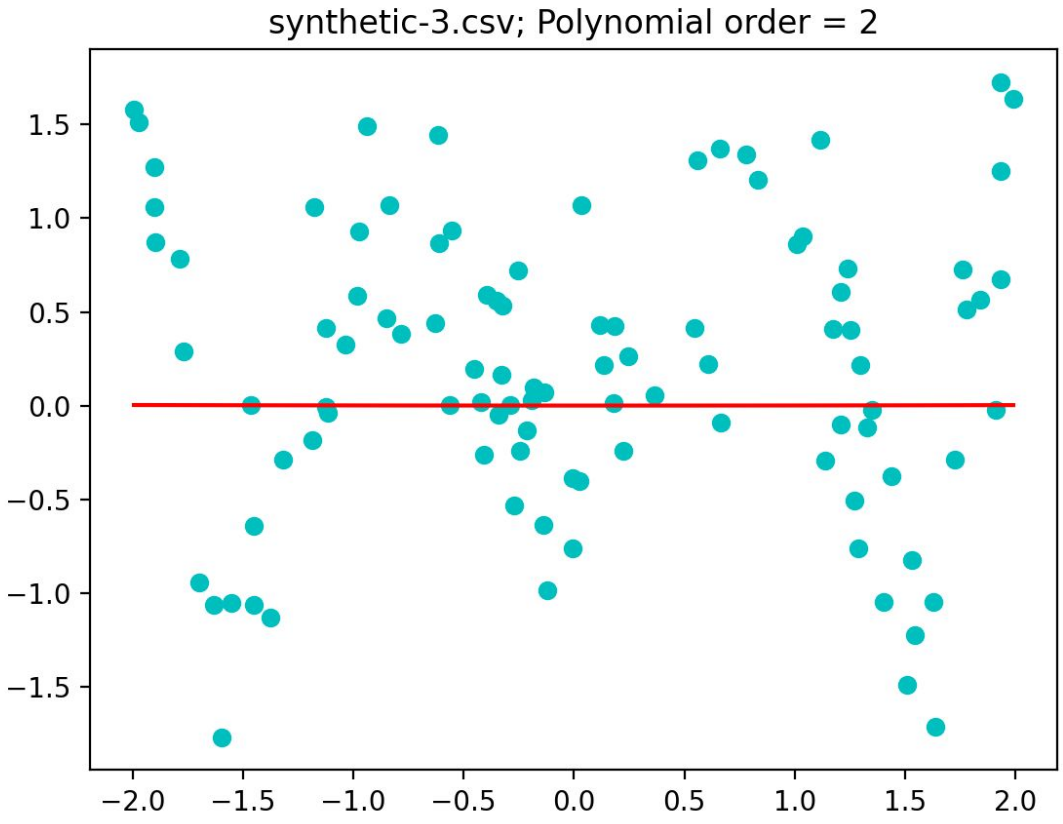
MSE = 49.18381346066691
Thetas = [0.006821791520627092, 0.005347612540860412, 0.0008345157550814063, 0.0006016725915652523, -0.002465840961627719]



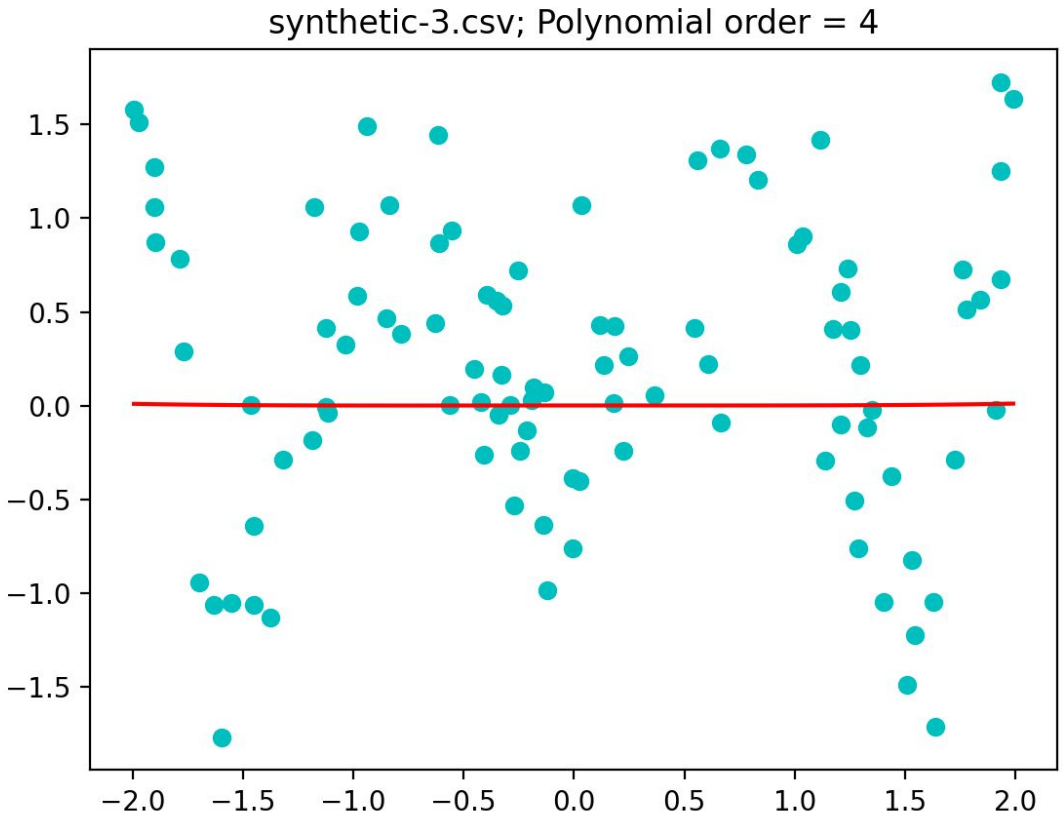
MSE = 49.58883873184461
Thetas = [-0.0033984392505130787, 0.003158198189235453,
-0.007346568738952306, -0.006390786256049326, -0.008763171791522674,
-0.004402355067116802, 0.005303546474340968, 0.006003036863164569]



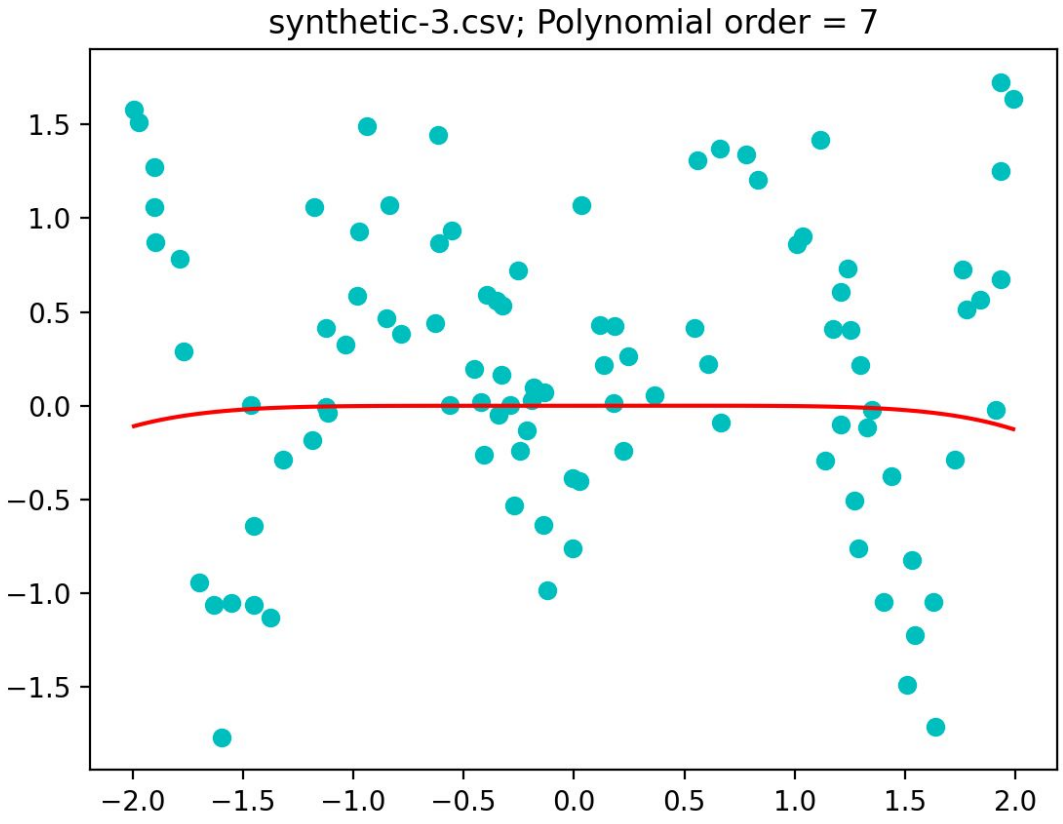
MSE = 0.6651664692732641
Thetas = [0.0003453290933055003, -1.534908562372529e-05]



MSE = 0.6649035855923462
Thetas = [-3.0447478431965688e-05, -0.00013275658583222747, 0.0006757425168985522]



MSE = 0.6637575267637841
Thetas = [0.0004819281540931512, 0.00021638150909896397,
-0.0006998129654226021, 2.502358354290533e-05, 0.0007668947727199406]



MSE = 0.686199400772019

Thetas = [-0.0011682395641232565, 0.0003644025568319127, 0.0007457749309317767, -6.985575632253776e-05, -0.0006406084520821031, -0.0001413708580422 6423, -0.001753771494719354, -3.426334877534926e-05]