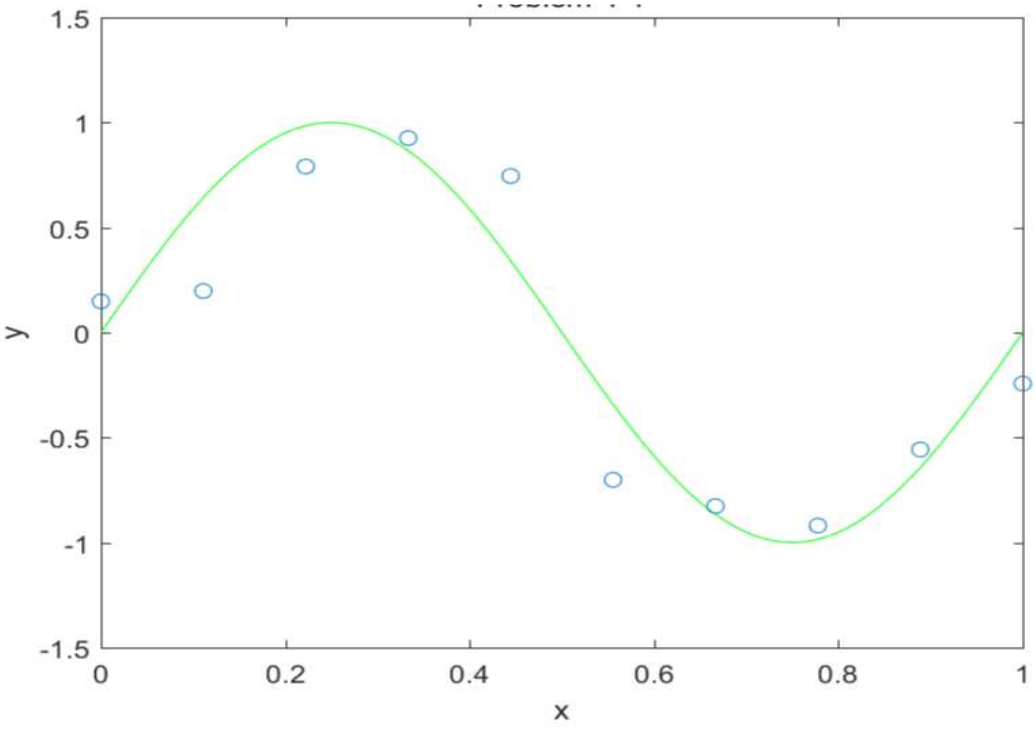
< CSE 302 Assignment 1 >

1. Plot 10 samples, spaced uniformly in range [0, 1], with the function sin(2πx) with a Gaussian noise like below.



2. Generate regression lines with polynomial basis function with order 1, 3, 5, 9, and 15.

3. Add 2 or 3 points of exceptional outliers that do not follow sin(2πx) and then generate regression lines with polynomial basis function with order 1, 3, 5, 9, and 15.

4. For the case including the outliers, generate the regression lines with the L2 regularization term with order 9 and 15. Show how the lines are changed with respect to λ. Generate the regression lines with the L1 regularization term and compare the lines with L2 regularization.

5. Plot 100 samples with the function sin(2πx) instead of 10 samples, and then generate the regression lines with order 1, 3, 5, 9, and 15.