---PROBLEM 1---

-Part 1-
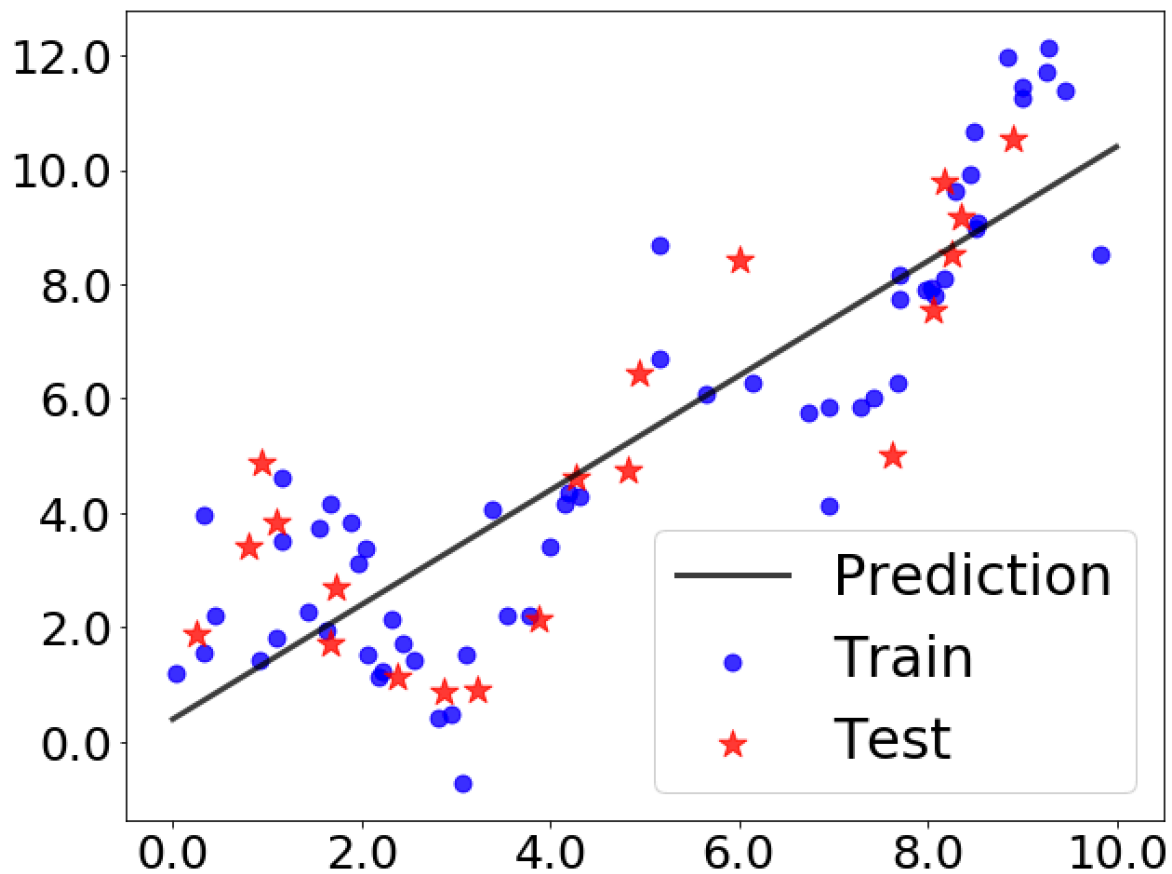Xtr Shape: (60, 1)
Xte Shape: (20, 1)
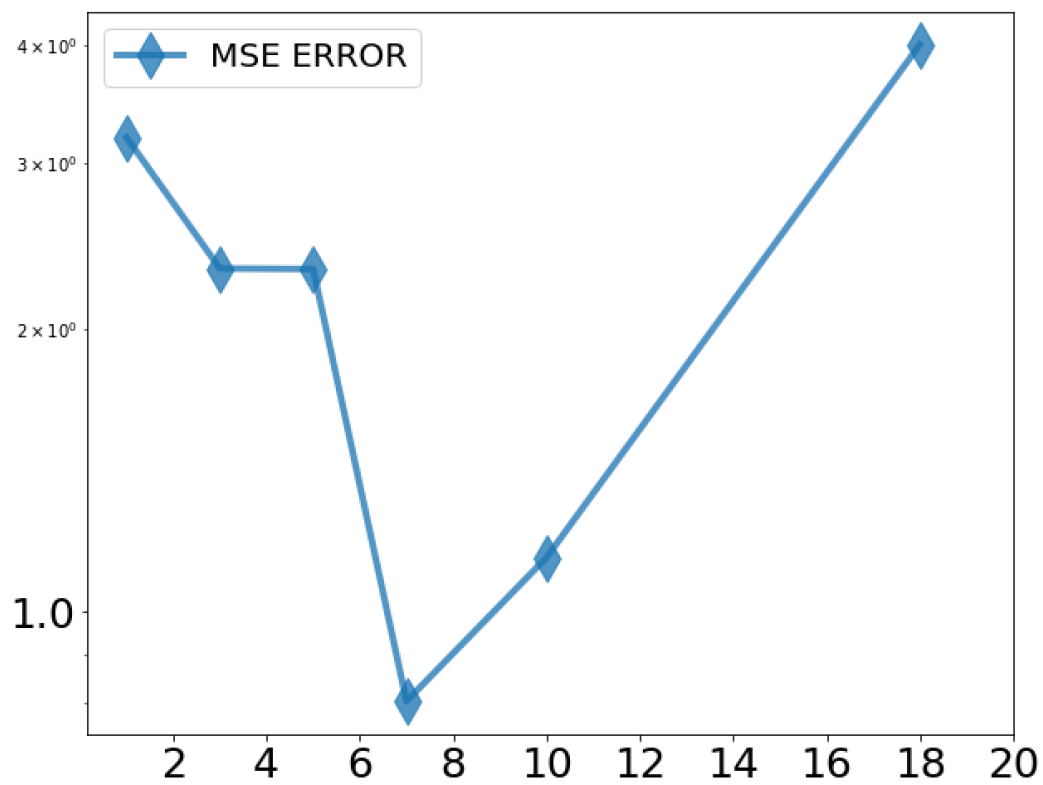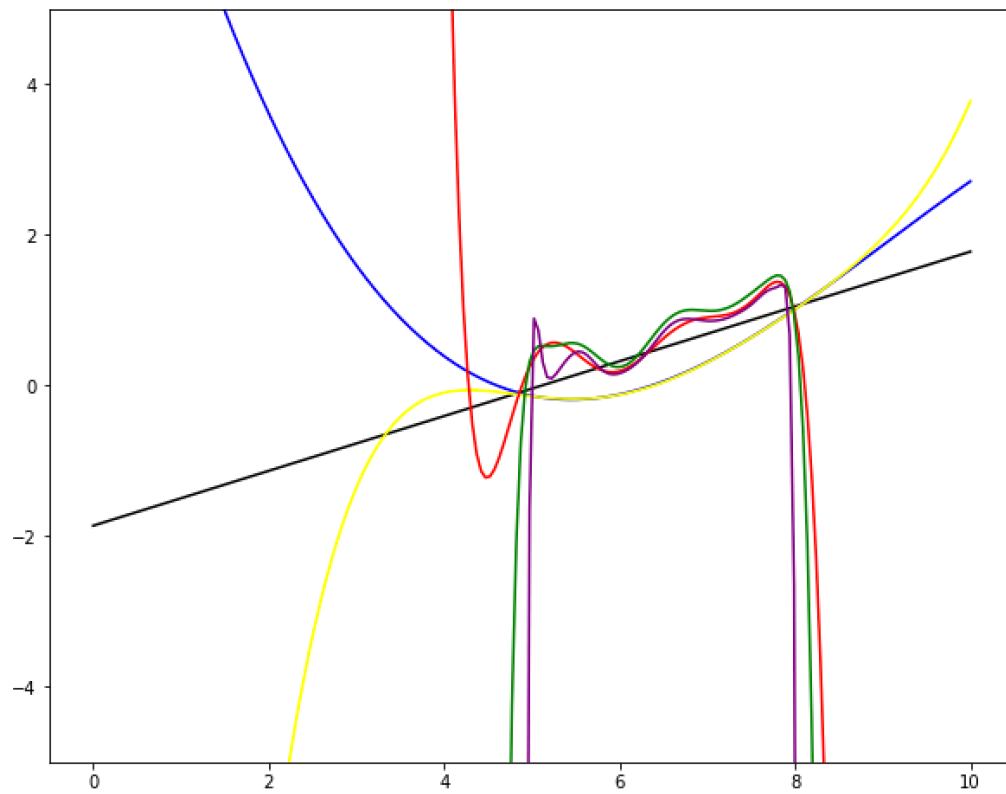Ytr Shape: (60,)
Yte Shape: (20,)

-Part 2-

Linear coefficients: [[0.39225483 1.0010092]]
MSE Training: [2.92101331]
MSE Testing : [3.42920896]
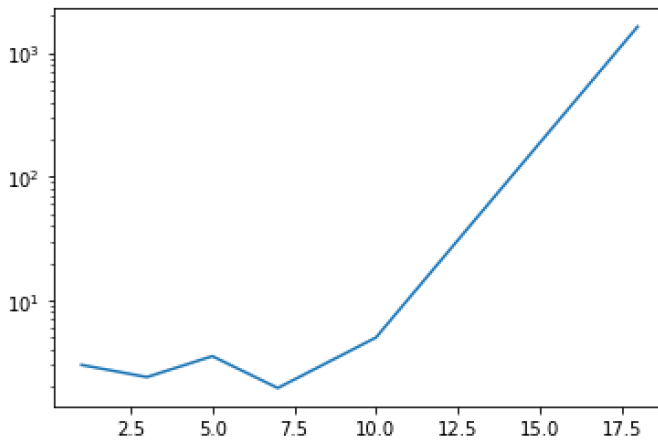
-Part 3-

I recommend degree 7

---PROBLEM 2---

-Part 1-

-Part 2-
The 5-fold data shows a similar trend to the MSE values of the true data.
      The main differences are the trend found between the lower degrees, and
      the MSE values at higher degrees. The MSE values of the 5-fold data are much higher
      at degree 10 and and 18. There is also a raise in error between degree 3 and 5
      in the 5-fold data, while the true data evaluates the MSE as the same.

-Part 3-
I recommend degree 7

-Part 4-
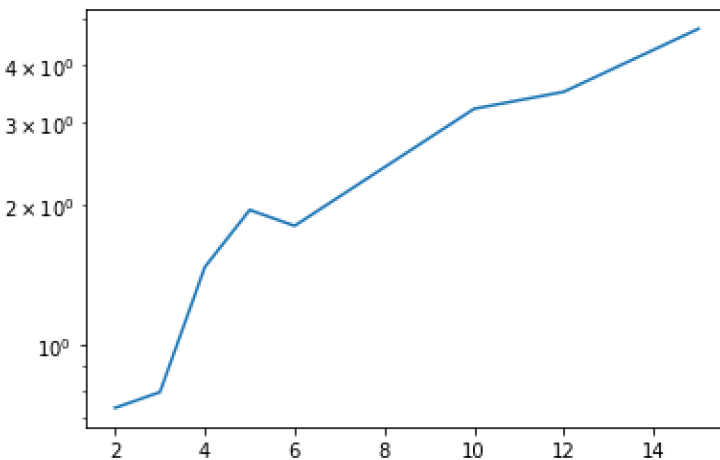
As the k increases, the error increases as well. Normally this is not the case,
      but I think that it is occuring here because of the degree of the graph. The
      approximations made by the graph with degree 7 are very accurate between values 4
      and 9. Because of that, increasing the amount of folds, therefore checking error
      on more sections that are outside of those bounds, creates a higher average error.

Statement of Collaboration: I did this assignment by myself