

Ford Tang

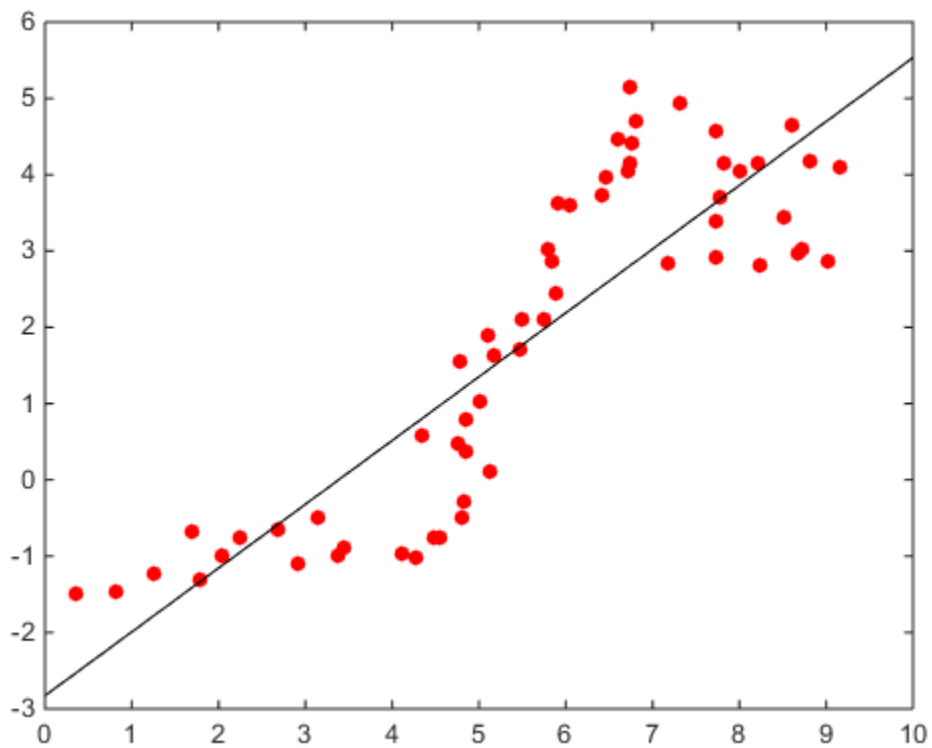
46564602

CS 178

Homework #2

Problem 1

- a. `>> data = load('data/curve80.txt');`
`>> x = data(:,1);`
`>> y = data(:,2);`
`>> [Xtr Xte Ytr Yte] = splitData(x,y,.75);`
- b. `>> lr = linearRegress(Xtr, Ytr);`
`>> xs = [0:.05:10]';`
`>> ys = predict(lr,xs);`
`>> plot(Xtr, Ytr,'r.', 'markersize',20);hold on;plot(xs,ys,'k-');hold off;`



`mse(lr, Xtr, Ytr) = 1.1277`

`mse(lr, Xte, Yte) = 2.2423`

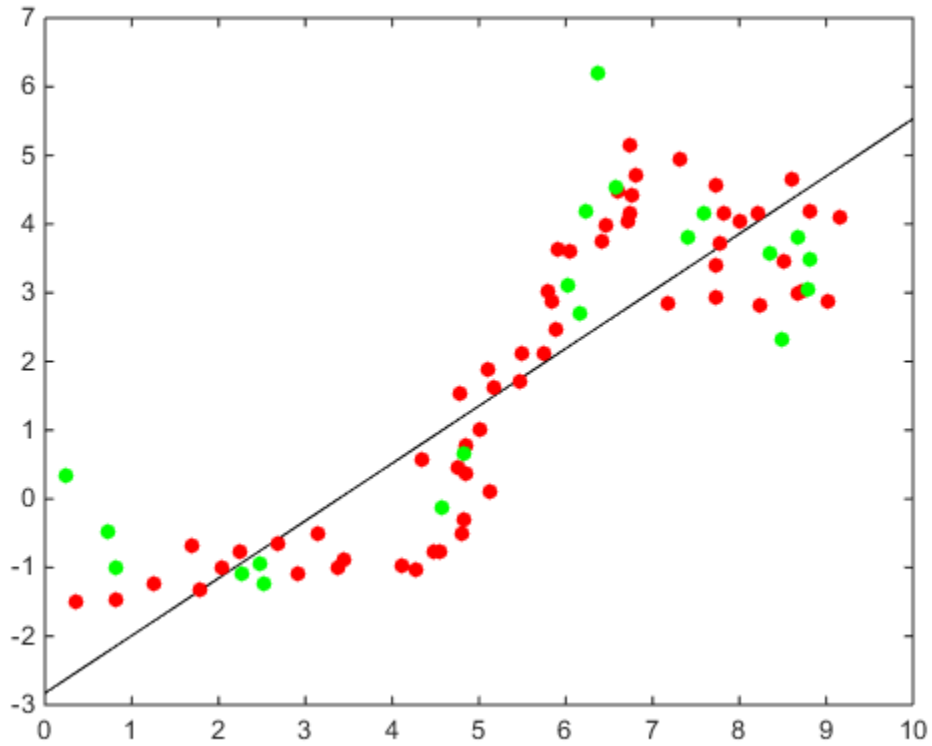
- c. `degree = [1, 3, 5, 7, 10, 18];`
`>> for i = 1:6,`
`figure(i)`
`XtrP = fpoly(Xtr, degree(i), false);`
`[XtrP, M, S] = rescale(XtrP);`
`lr = linearRegress(XtrP, Ytr);`
`Phi = rescale(fpoly(xs, degree(i), false), M, S);`
`ys = predict(lr, Phi);`

```

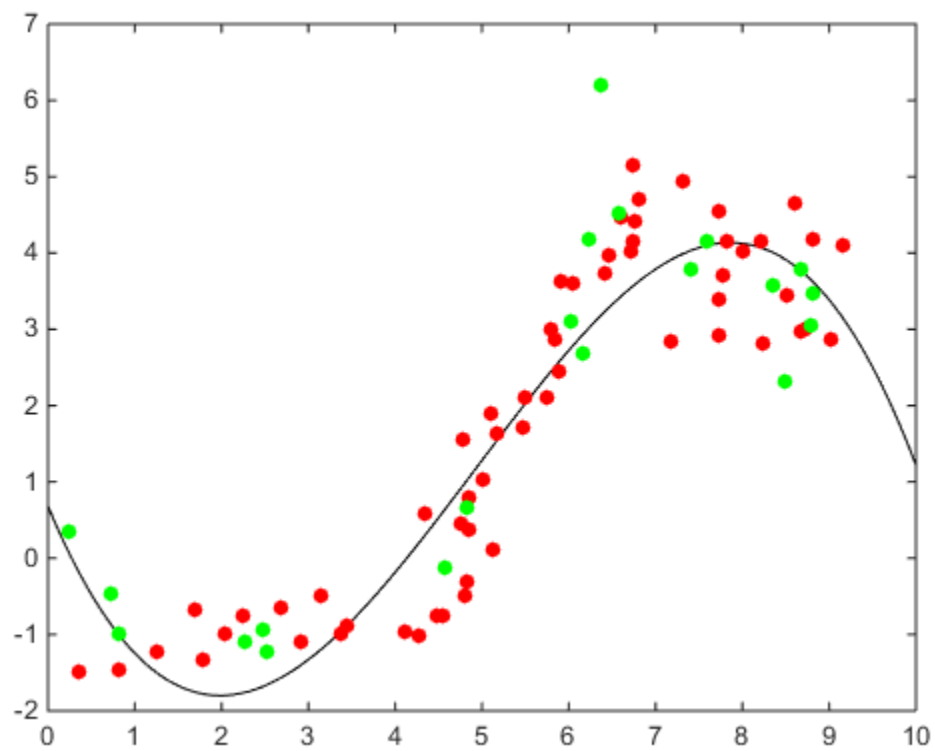
plot(xs, ys, 'k-', Xtr, Ytr, 'r.', Xte, Yte, 'g.', 'markersize', 20)
XteP = rescale(fpoly(Xte, degree(i), false), M, S);
error(:,end+1) = [mse(lr, XtrP, Ytr) , mse(lr, XteP, Yte)]';
end;

```

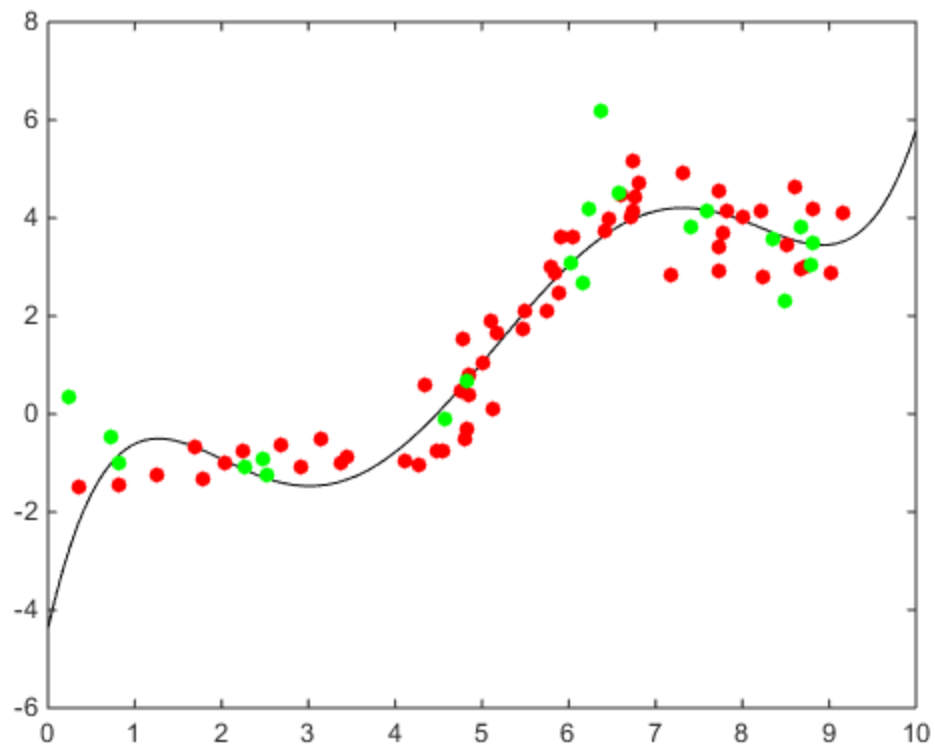
degree = 1



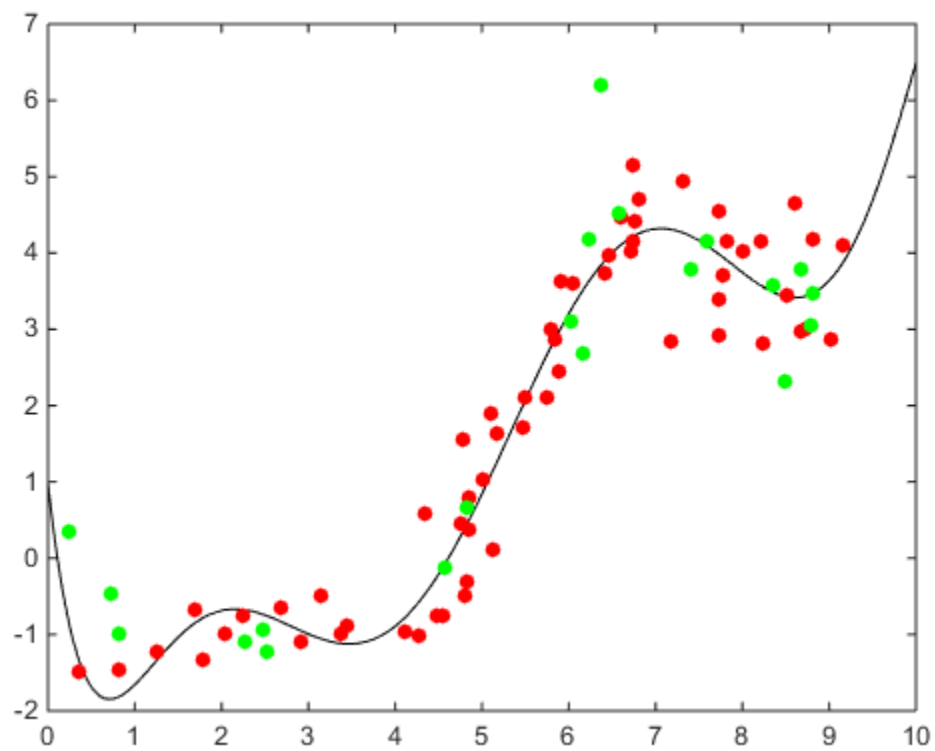
degree = 3



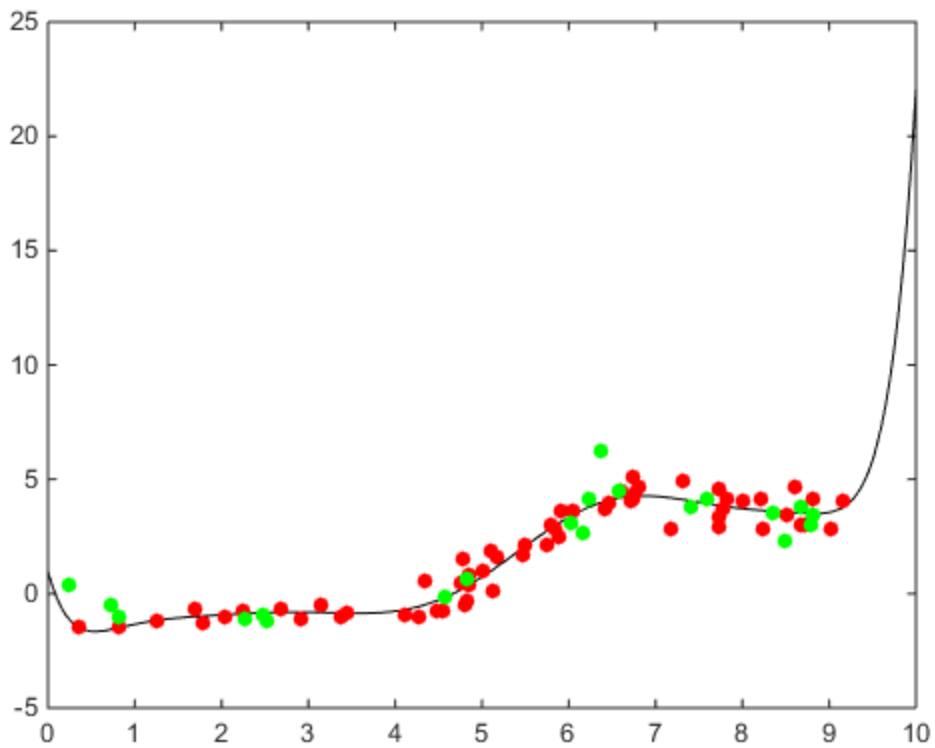
degree = 5



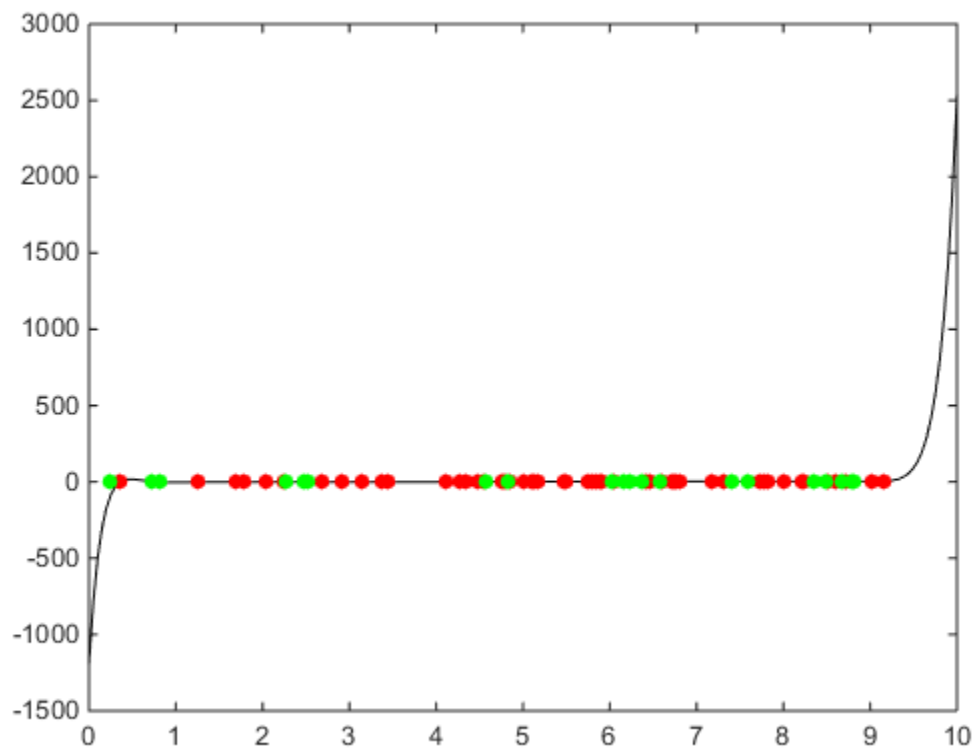
degree = 7



degree = 10



degree = 18



semilogy(degree, error(1,:), '-r', degree, error(2,:), '-g');

