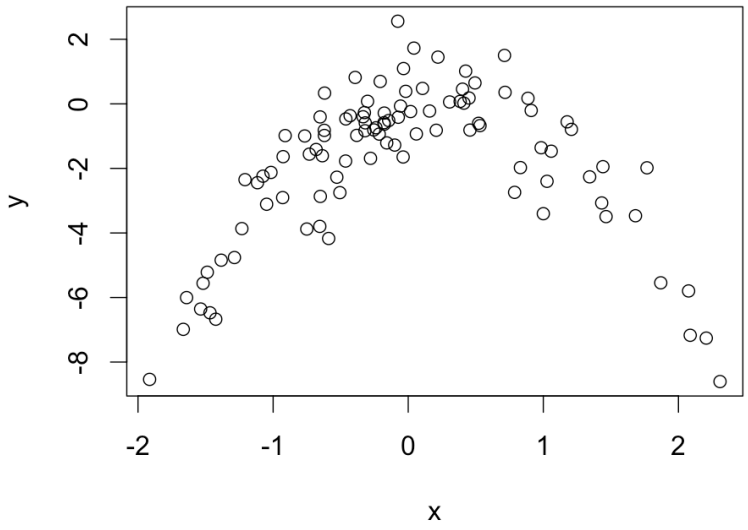
Roger(Siwei Zhang)
20335254 HW7
5.4 Exercise 8
a.
n=100 p=2
y = x - 2 * x ^ 2 + rnorm(1)

b.
plot(x,y)



x is mostly between -2 to 2
y is mostly between -8 to 2

c.
LOOCV errors result from fitting the following four models using least squares:
[1] 5.890979 5.888812
[1] 1.086596 1.086326
[1] 1.102585 1.102227
[1] 1.114772 1.114334

d.
The result is same as c. Because they use the same observation.

e.
ii. $Y = \beta_0 + \beta_1 X + \beta_2 X^2 + \varepsilon$ has the smallest LOOCV errors. Yes. Because our model is quadratic.

f.

From the p-value we can see that the poly(x, 4)2 is the most significant which agree with the conclusions drawn based on the cross-validation results.