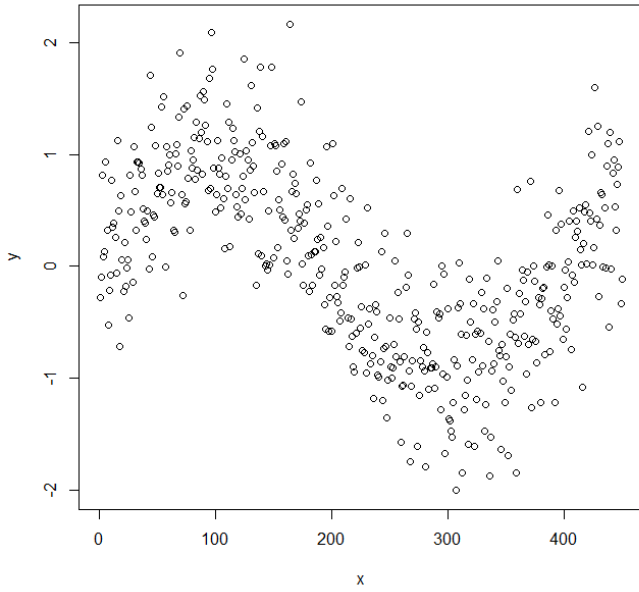2. (15 pts) You are given the following data (n=450) shown in the plot below.


Here are the first 20 observations:

x	y	
1	-0.3	
2	-0.1	
3	0.8	
4	0.1	
5	0.9	
6	0.3	weight = ?
8	-0.5	
9	-0.2	
10	-0.1	weight= ?
11	0.8	
12	0.4	
13	-0.1	
16	1.1	
17	0.5	
18	-0.7	
19	0.6	
20	0.1	

a) Suppose that you decide to perform a lowess smooth using a span ~ 0.013 which results in **6** data points. Suppose you are interested in performing the smooth at x=10. Use the tri-cube weight function found in the document **Loess_Chapter.pdf from Lecture 18** to list the two requested weights in the table above. Just write the formula filled in with the appropriate values, no need to carry through the calculation.
b) On the plot above, draw as best as you can a straight line smooth of the data and label it with a 'b'. (smoothed y=mx+b)
c) On the plot above, draw as best as you can what a lowess smooth with a span equating to 10 data points might look like and label it with a 'c'. No calculations are needed.
d) On the plot above, draw as best as you can what a lowess smooth with a span equating to all n=450 data points might look like and label it with a 'd'. No calculations are needed.
e) In a lowess smooth with n data points, what is the number of regressions that need to be performed?

3. (10 pts) Suppose a simple test is developed to detect whether a person has COVID-19 disease.
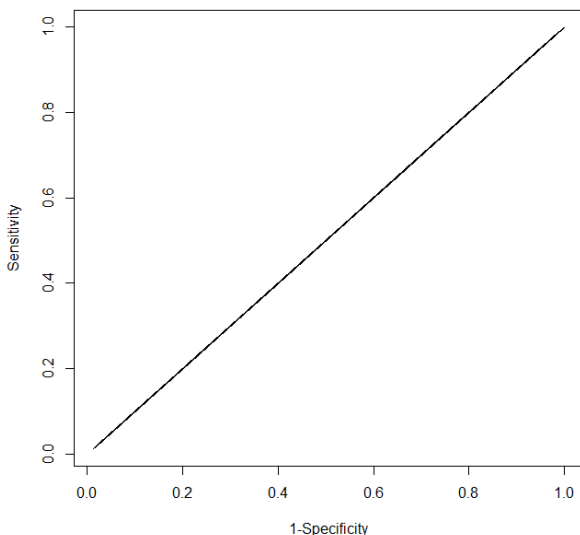
a) Using the figure to the left, plot the ideal ROC curve you would want for this simple test.

b) Suppose the following 2x2 table resulted from the simple test and a "gold standard" test applied to a sample of 120 individuals with high risk for COVID-19 disease.

		Gold Standard Test Result	
		Positive	Negative
Simple Test Result	Positive	35	10	45
	Negative	5	70	75
		40	80	

Compute the accuracy, sensitivity, specificity, positive predictive power, and negative predictive power for the simple test.