ASSIGNMENT

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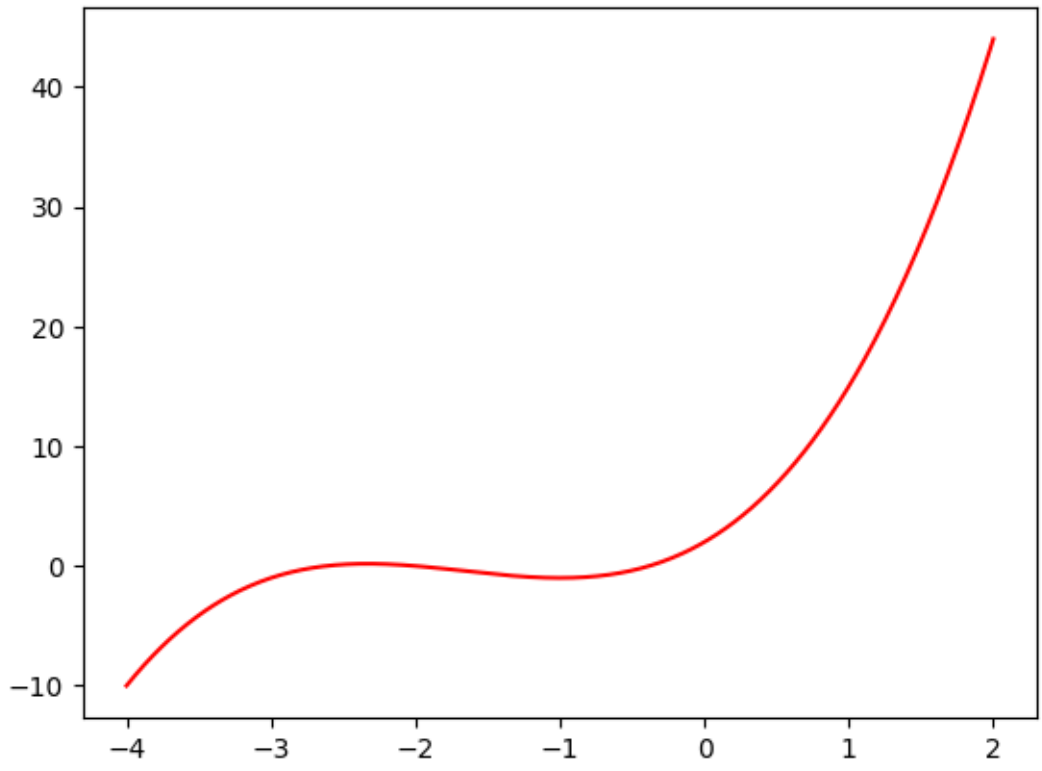
B200812CS

First, we should import all the required modules like numpy, pandas, random,pyplot,train_test_split.

1st Question:

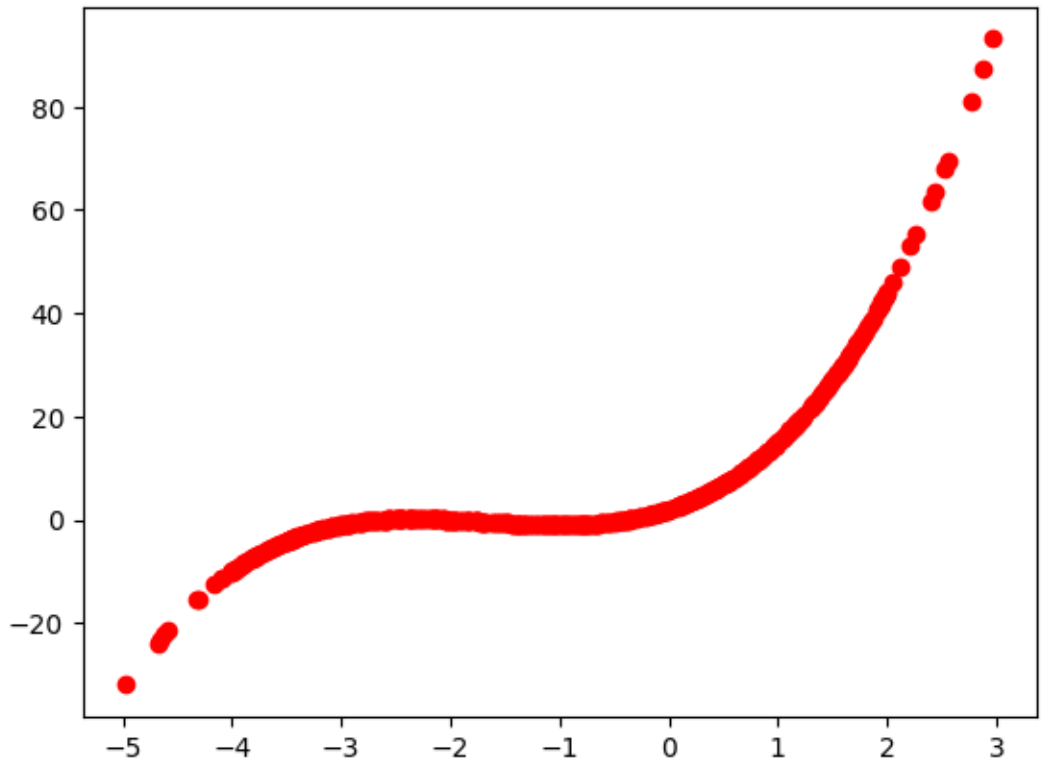
Draw the plot for f(x)=x^3+5x^2+7x+2 , and declare a variable to plot the graph.



2nd Question:

Add a 30% noise to the graph using random.normal function.

use 150 points to plot the graph.



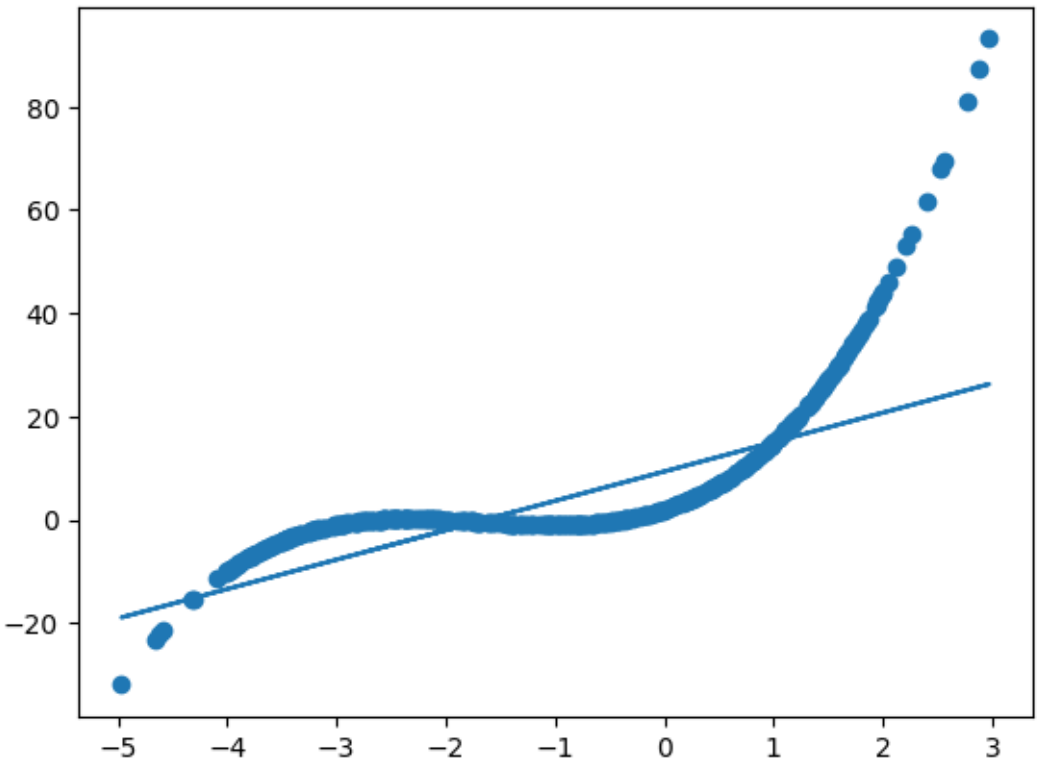
3rd Question and 4th Question:

Declare a function cost_function which returns train error and now

Declare a function gradient_descent which returns slope and gradient of the line required.

Train error is: 95.6955319936429

Test error is : 63.702460832601496



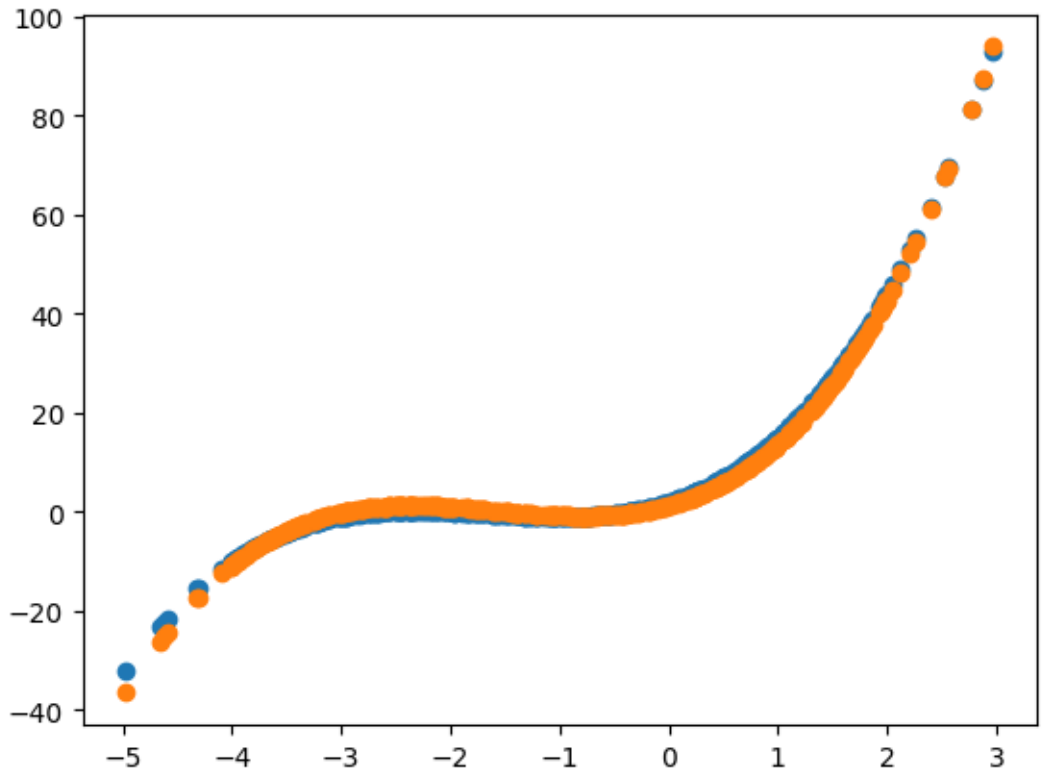
5th Question:

a)Declare a function as cost_function_quadratic which returns train error and test error.

b) Declare a function cost_function_cubic which returns train error and test error.

Train error 2 is: 0.9868582387772387

Test error 2 is: 0.9726460118326113

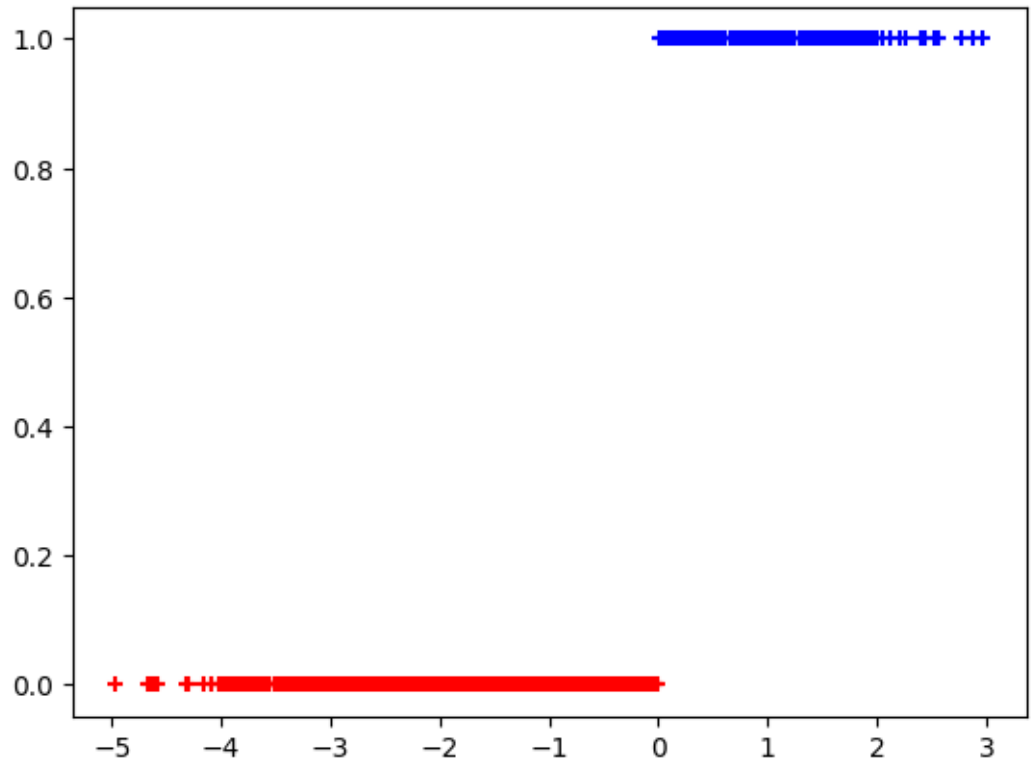


From the above quadreatic as well as cubic models , the train and test errors lead to the best model ie is cubic which is better than the above mentioned two.

6th Question:

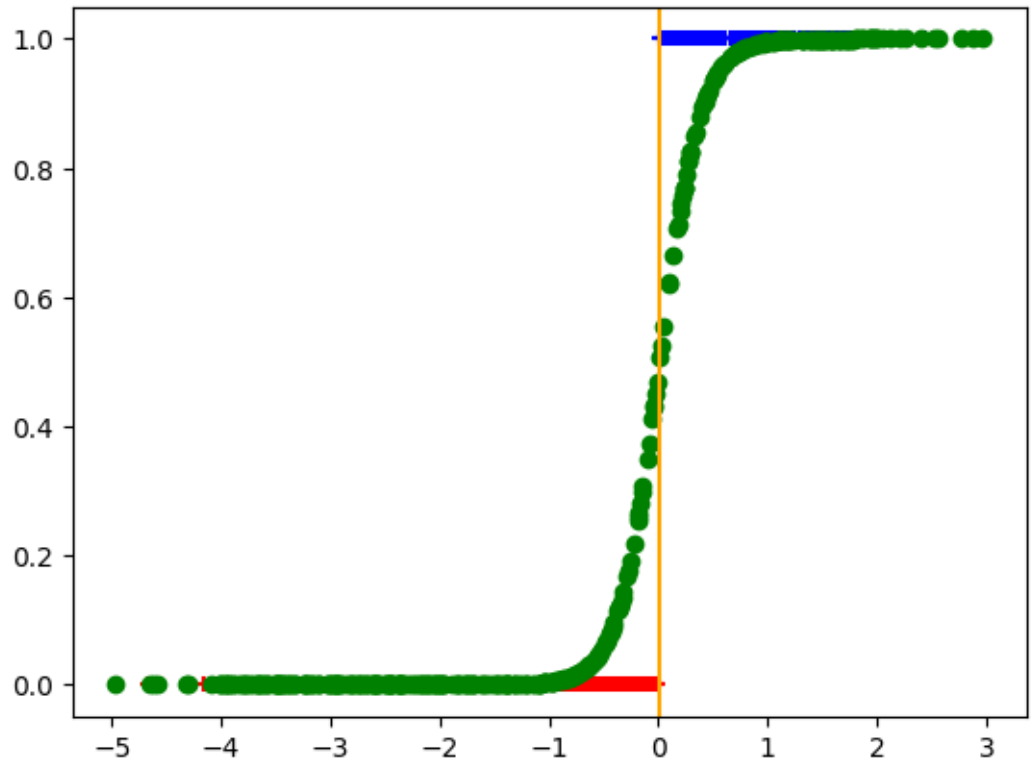
Put all the negative values in class 0 and positive values in class 1.

Plot curve for class 0 and class 1.



7th Question:

The line divides the above two classes which acts as a boundary between the two classes.



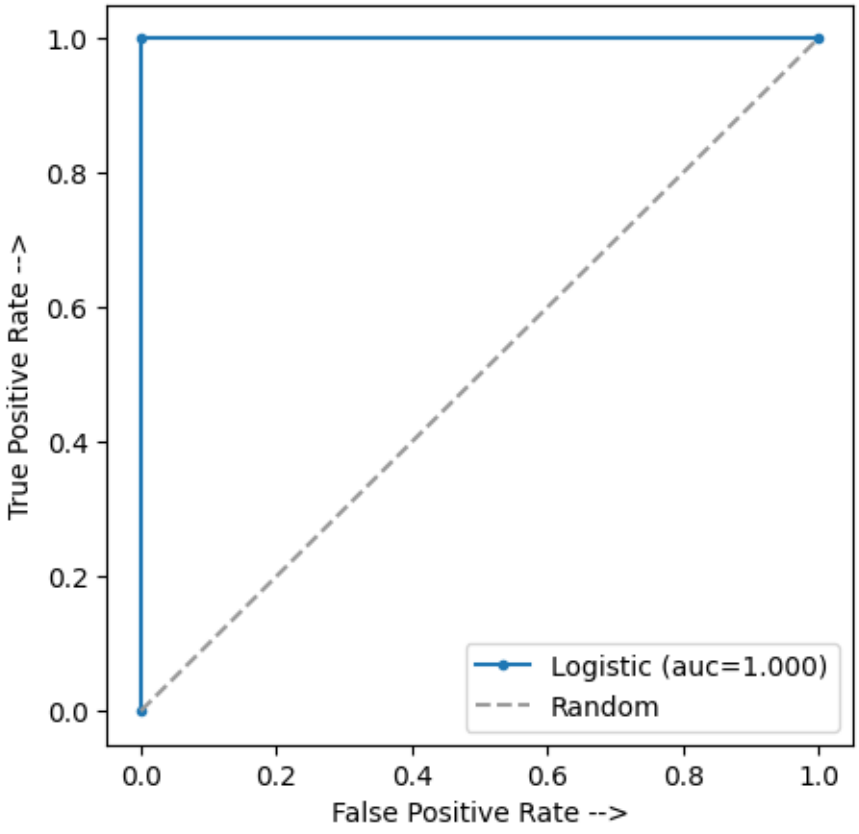
[[65 0]

[0 35]]

8th Question:

Import roc_curve and auc

Plotted the roc curve and found auc.


1.0
0.8
0.6
0.4
0.2
0.0
True Positive Rate -->
0.0
0.2
0.4
0.6
0.8
1.0
False Positive Rate -->
Logistic (auc=1.000)
Random