MATHEMATICAL MODELLING AND SIMULATION

PRACTICAL TEST – 1

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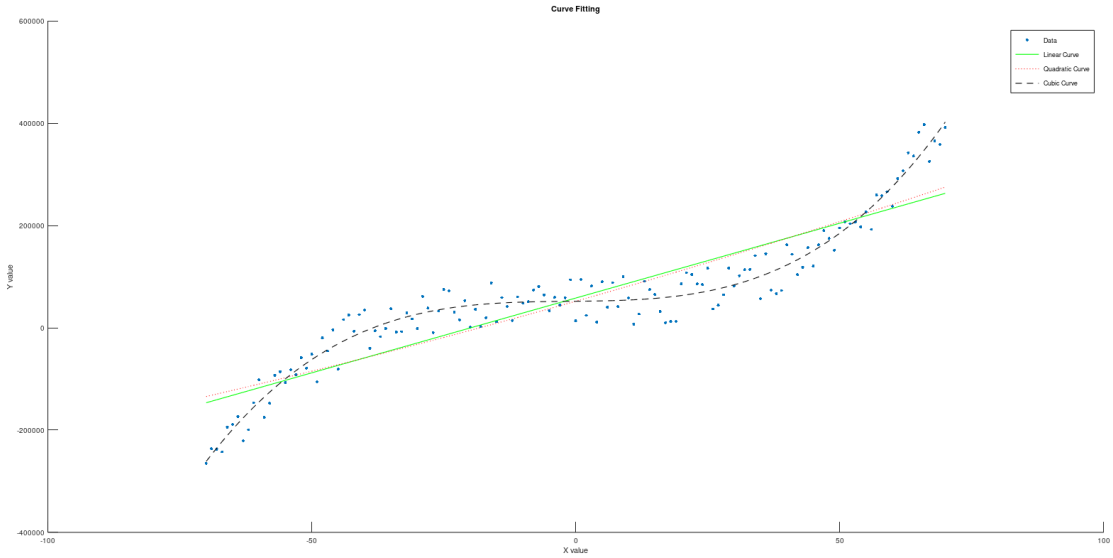
AIM: Load some data and create a linear, quadratic and cubic model. Plot the result in the same plot and also the original data and compare them. Add x- label, y-label, title and a legend to the plot and use different line styles.

CODE:

```
X = [-70:70];

b = 5*rand;
c = 8*rand;

y = X.^3 + b*X.^2 + c*X + 100000*rand(size(X));

coefs1 = polyfit(X, y, 1);
Y1 = coefs1(1)*X+coefs1(2);

coefs2 = polyfit(X,y,2);
Y2 = coefs2(1)*X.^2 + coefs2(2)*X + coefs2(3);

coefs3 = polyfit(X,y,3);
Y3 = coefs3(1)*X.^3 + coefs3(2)*X.^2 + coefs3(3)*X + coefs3(4);

scatter(X,y,'.');
hold on
plot(X,Y1,"g", X,Y2,"r:",X,Y3,"k--");

xlabel('X value')
ylabel('Y value')
title('Curve Fitting')
legend('Data', 'Linear Curve', 'Quadratic Curve', 'Cubic Curve')
```

OUTPUT:


Curve Fitting
Data
Linear Curve
Quadratic Curve
Cubic Curve
600000
400000
200000
0
-200000
-400000
Y value
-100
-50
0
50
100
X value