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:

