**ASSIGNMENT NO:-4**

**PROGRAM NO:-a**

%Name of program: STRAIGHT LINE CURVE FITTING

%Name of student: Vedant Patil

%Roll no: 2196099

%I/P: x,y

x=input('Enter the values of x');

y=input('Enter the values of y');

n=length(x);

sumx=0;sumy=0;sumx2=0;sumxy=0;

for i=1:1:n

sumx=sumx+x(i);

sumx2=sumx2+(x(i))^2;

sumxy=sumxy+y(i)\*x(i);

sumy=sumy+y(i);

end

p=[sumx2,sumx;sumx,n];

q=[sumxy;sumy];

s=p\q;

A=s(1)

B=s(2)

fprintf('Y=%f\*X+%f',A,B)

% Enter the values of x[19;25;30;36;40;45;50]

% Enter the values of y[76;77;79;80;82;83;85]

% A =

% 0.2923

% B =

% 70.0535

% Y=0.292350\*X+70.053474>>

% polyfit(x,y,1)

% ans =

% 0.2923 70.0535

**ASSIGNMENT NO:-4**

**PROGRAM NO:-b**

%Name of program: Curve fitting Exponential Function

%Name of student: Vedant Patil

%Roll no: 2196099

%I/P: x,y

% y = a\*e^bx

x=input('enter x vector');

y=input('enter y vector');

n=length(x);

sumx=0;

sumY=0;

sumxY=0;

sumxx=0;

for i=1:1:n

Y(i)=log(y(i));

sumx=sumx+x(i);

sumY=sumY+Y(i);

sumxY=sumxY+(x(i)\*Y(i));

sumxx=sumxx+(x(i)\*x(i));

end

%BY CRAMER'S RULE

dA=[sumxY,sumx;sumY,n];

dB=[sumxx,sumxY;sumx,sumY];

dS=[sumxx,sumx;sumx,n];

A=det(dA)/det(dS);

B=det(dB)/det(dS);

a=exp(B);

b=A;

fprintf('y = %0.4f x e^(%0.4fx) \n',a,b);

yy=a.\*exp(b.\*x);

plot(x,y,'-rx',x,yy,'-bv')

% enter x vector[0 1 2 3]

% enter y vector[2 2.2103 2.4428 2.6997]

% y = 2.0000 x e^(0.1000x)

**ASSIGNMENT NO:-4**

**PROGRAM NO:- c**

%Name of program: Curve fitting power Equation

%Name of student: Vedant Patil

%Roll no: 2196099

%I/P: x,y

% y = a\*b^x

x=input('enter x vector');

y=input('enter y vector');

n=length(x);

sumx=0;

sumY=0;

sumxY=0;

sumxx=0;

for i=1:1:n

Y(i)=log(y(i));

sumx=sumx+x(i);

sumY=sumY+Y(i);

sumxY=sumxY+(x(i)\*Y(i));

sumxx=sumxx+(x(i)\*x(i));

i=i+1;

end

%BY CRAMER'S RULE

dA=[sumxY,sumx;sumY,n];

dB=[sumxx,sumxY;sumx,sumY];

dS=[sumxx,sumx;sumx,n];

A=det(dA)/det(dS);

B=det(dB)/det(dS);

a=exp(B);

b=exp(A);

fprintf('y = %f x %f ^x\n',a,b);

yy=a.\*b.^x;

plot(x,y,'-rx',x,yy,'-bv')

% enter x vector[1 3 4 6 9]

% enter y vector[0.84 0.4116 0.2888 0.141 0.048]

% y = 1.204377 x 0.699212 ^x

**ASSIGNMENT NO :- 4**

**PROGRAM NO :- d**

%Name of program: Quadratic Equation (2nd Degree Curve)

%Name of student: Vedant Patil

%Roll no: 2196099

%I/P: x,y

x=input('enter the vector x');

y=input('enter the vector y');

n=length(x);

sumx=0;

sumxx=0;

sumy=0;

sumxy=0;

sumxxx=0;

sumxxxx=0;

sumxxy=0;

for i=1:n

sumx=sumx+x(i);

sumxxx=sumxxx+(x(i).\*x(i).\*x(i));

sumxxxx=sumxxxx+(x(i).\*x(i).\*x(i).\*x(i));

sumxxy=sumxxy+(x(i).\*x(i).\*y(i));

sumy=sumy+y(i);

sumxy=sumxy+(x(i).\*y(i));

sumxx=sumxx+(x(i).\*x(i));

end

p=[sumxxxx,sumxxx,sumxx;sumxxx,sumxx,sumx;sumxx,sumx,n];

q=[sumxxy;sumxy;sumy];

s=p\q;

A=s(1);

B=s(2);

C=s(3);

a=A;

b=B;

c=C;

fprintf('eqn is %f\*x.^2+%f.\*x+ %f\n',a,b,c);

yy=a.\*x.^2+b.\*x+c;

plot(x,y,'-rx',x,yy,'-bv');

%enter the vector x[1 2 3 4 5 6 7]

%enter the vector y[-5 -2 5 16 31 50 73]

%eqn is 2.000000\*x.^2+-3.000000.\*x+ -4.000000