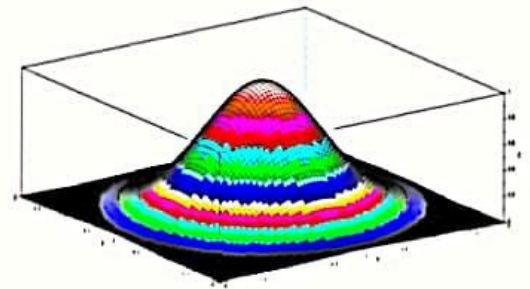


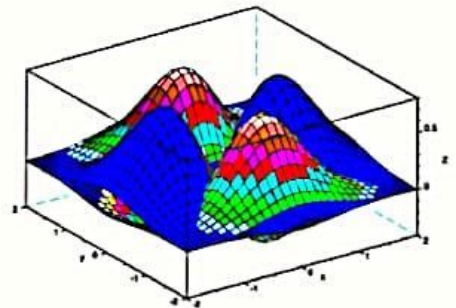
3D plotting on graph

```
function Z=f(x,y)
Z=exp(-x.^2-y.^2);
endfunction
x=linspace(-2,2,81);
y=linspace(-2,2,81);
Z=feval(x,y,f)
plot3d(x,y,Z) //blue graph//
```

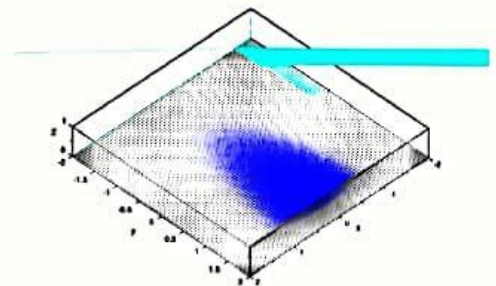
```
function Z=f(x,y)
Z=exp(-x.^2-y.^2);
endfunction
x=linspace(-2,2,81);
y=linspace(-2,2,81);
Z=feval(x,y,f)
plot3d(x,y,Z)
surf(x,y,Z)
xlabel('x')
ylabel('y')
```



```
function Z=f(x,y)
Z=(2*x^2-y^2)*exp(-x.^2-y.^2);
endfunction
x=linspace(-2,2,30);
y=linspace(-2,2,30);
Z=feval(x,y,f)
plot3d(x,y,Z)
surf(x,y,Z)
xlabel('x')
ylabel('y')
```



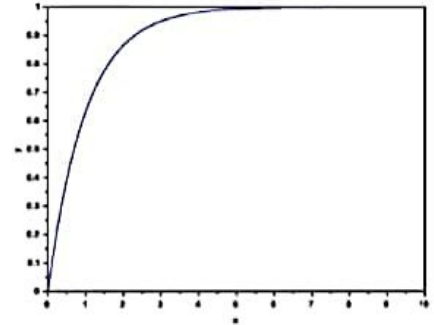
```
x=linspace(-2,2,81);
y=linspace(-2,2,81);
[x,y]=meshgrid(x,y);
z=exp(-x.^2-y.^2);
plot3d(x,y,z)
xlabel('x')
ylabel('y')
```



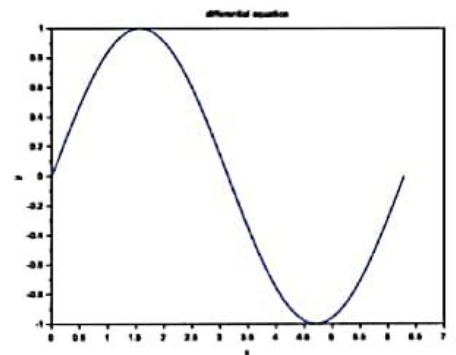
Differential equations

1st order Differential equations

```
function ydot=f(x,y)
ydot=exp(-x);
endfunction
y0=0;
x0=0;
x=0:0.1:10;
y=ode(y0,x0,x,f)
plot(x,y)
xlabel('x')
ylabel('y')
```

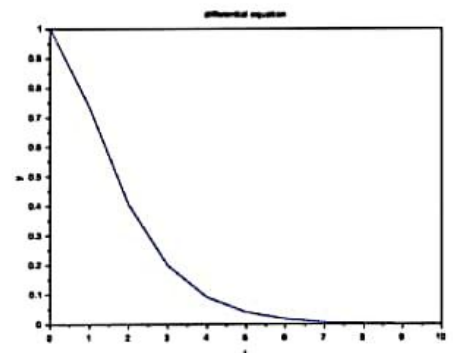


```
function ydot=f(t,y)
ydot= y^2 -y*sin(t)+cos(t);
endfunction
y0=0;
t0=0;
t=0:0.01:2*pi;
y=ode(y0,t0,t,f)
plot(t,y)
title('differential equation')
xlabel('t')
ylabel('y')
```

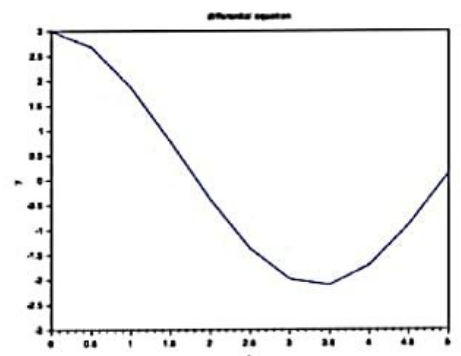


2nd order Differential equations

```
function ydot=f(t,y)
ydot(1)=y(2);
ydot(2)=-y(1)-2*ydot(1);
endfunction
y0=1;
t0=0;
t=0:1:10;
ydot0=0;
y=ode([y0;ydot0],t0,t,f)
plot(t,y(1,:))
title('differential equation')
xlabel('t')
ylabel('y')
```



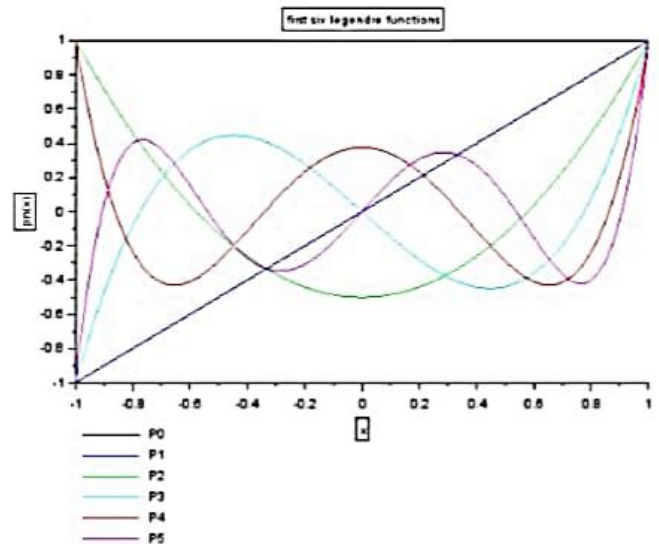
```
function ydot=f(t,y)
ydot(1)=y(2);
ydot(2)=-y(1)-(exp(-t)*y(2));
endfunction
y0=3;
t0=0;
t=0:0.5:5;
ydot0=0;
y=ode([y0;ydot0],t0,t,f)
plot(t,y(1,:))
title('differential equation')
xlabel('t')
ylabel('y')
```



Legendre and Bessel's Functions

Legendre function

```
funcprot(0)
n=0:5;
x=[-1:0.001:1]'
y=legendre (n,0,x)'
plot2d(x,y,leg='P0@P1@P2@P3@P4@P5')
xtitle(['first six legendre functions'],'x',['pn(x)'],boxed=%t)
```



Bessel's function

```
funcprot(0)
x=[0:0.01:20]';
n=0:5;
y=besselj(n,x)
plot2d(x,y,leg='J0@J1@J2@J3@J4@J5')
xtitle(['first six besel functions'],'x',['Jn(x)'],boxed=%t)
```

