

```
% Plot Command Matlab
% Engr. Faisal ur Rehman
% enggprog.com
```

```
%3D Curve Plot (Plot3(x,y,z)):
t=[0:pi/50:10*pi];
plot3(exp(-0.05*t).*sin(t),...
      exp(-0.05*t).*cos(t),...
      t), xlabel('x'),ylabel('y'),zlabel('z'),grid on
```

```
%3D Wire-Frame/Mesh Plot(mesh(x,y,z))
[x y] = meshgrid(-2:.1:2);
z=x.*exp(-((x-y.^2).^2+y.^2));
mesh(x,y,z)
```

```
%3D Surface Plot ( surf(x,y,z))
surf(x,y,z)
%Contour Plot (contour(x,y,z))
contour(x,y,z)
%Filled Contour (Contourf(x,y,z))
contourf(x,y,z)
%Contour with output variable c and h
[c h] = contourf(x,y,z)
[c h] = contourf(x,y,z);
%Plot label of Contour Line
clabel(c,h)
%Colorbar showing variation in 3D Plot (used in mesh, surf
and contour)
colorbar
%3D surfaces with contour
meshc(x,y,z)
surfc(x,y,z)
colorbar
%Contour lines in 3D
contour3(x,y,z)
%Subplot example
x=[0:0.01:5];
```

```
y=exp(-1.2*x).*sin(10*x+5);
subplot(1,2,1)
plot(x,y),xlabel('x');ylabel('y')
axis([0 5 -1 1])
subplot(1,2,2)
z=abs(x.^3-100);
plot(x,z)
%to bring new figure for plot
figure
plot(x,y)
%to close current figure
close figure 2
%to close all figure
close all
%Log Graphs
loglog(x,z)
grid on
semilogx(x,z)
grid on
semilogy(x,z)
grid on
%bar charts
x=[1 2 3 4];y=[2 3 4 5];
bar(x,y)
clc
% use of ginput
x=[0:.01:5];
y=2*sqrt(x);
z=4*sin(3*x);
plot(x,y,x,z)
title('Plot of Sine and Sqrt line')
[xi yi]=ginput(5)
%to find intersection points of 2 lines
[xi yi]=polyxpoly(x,y,x,z)
clc
%set limits of axis
axis([0 5 -5 5])
close all
clc
```

**%example for use of x axis labels**

```
x=[-pi:.1:pi];
y=sin(x);
plot(x,y)
set(gca, 'XTick', [-pi:pi/2:pi])

set(gca, 'XTicklabel', {'-pi', '-pi/2', '0', 'pi/2', 'pi'})
clc
```

**%Aspect Ratio**

```
t=[0:pi/20:20*pi];
plot(sin(t),2*cos(t));
t=[0:pi/20:2*pi];
plot(sin(t),2*cos(t));
grid on
axis square
axis normal
axis equal tight
axis equal
clc
close all
```

**%Create Axes 2 plots having different x and y axes**

```
x1=[0:.1:40];
y1=4.*cos(x1)./(x1+2);
x2=[1:.2:20];
y2=x2.^2./x2.^3;
hl1=line(x1,y1, 'Color', 'r');
ax1=gca;
set(ax1, 'XColor', 'r', 'YColor', 'r')
ax2=axes('Position',get(ax1, 'Position'),...
'XAxisLocation', 'top',...
'YAxisLocation', 'right',...
'Color', 'none',...
'XColor', 'k',...
'YColor', 'k')
```

```
clc
hl2=line(x2,y2,'color','k','Parent',ax2);

%to set limits of axes
xlims=get(ax1,'XLim');
ylims=get(ax1,'YLim');
xinc=(xlims(2)-xlims(1))/5;
yinc=(ylims(2)-ylims(1))/10;
set(ax1,'XTick',[xlims(1):xinc:xlims(2)],...
'YTick',[ylims(1):yinc:ylims(2)])
set(ax1,'XTick',[xlims(1):xinc:xlims(2)],...
'YTick',[ylims(1):yinc:ylims(2)])

%to change background color of figure
whitebg('g')
whitebg('r')
whitebg('k')
whitebg('y')
clc
% to get plot of 2 curves with different y axis scale
x=[0:.01:5];
y=exp(-1.2*x).*sin(10*x+5);
z=abs(x.^3-100);
%following plot will not capture the peaks of first curve
plot(x,y,x,z)
%following plot will capture the peaks of first curve
because of 2 different y scale
plotyy(x,y,x,z)
%title of plot
title('Y vs X & Z vs X'),gtext('y'),gtext('z')
```