1.

```
clear;clc;clf
figure(1)
x = linspace(0,2*pi,100)
```

```
x = 1×100
         0    0.0635    0.1269    0.1904    0.2539    0.3173    0.3808    0.4443 ···
```

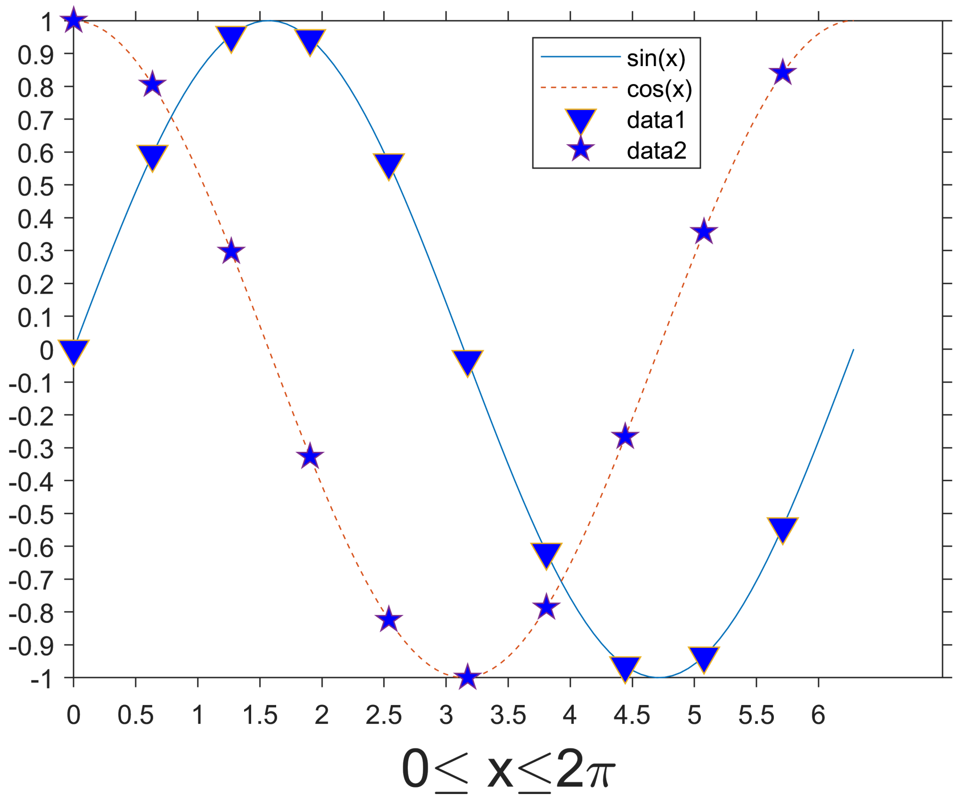
```
hx1=plot(x,sin(x),'-');hold on
hx2=plot(x,cos(x),'--')
```

```
hx2 =
  Line with properties:

              Color: [0.8500 0.3250 0.0980]
          LineStyle: '--'
          LineWidth: 0.5000
             Marker: 'none'
         MarkerSize: 6
    MarkerFaceColor: 'none'
              XData: [1×100 double]
              YData: [1×100 double]
              ZData: [1×0 double]

  Show all properties
```

```
set(gca,'tickdir','out','xtick',[0:0.5:2*pi],'ytick',[-1:0.1:1])
xlabel('0\leq x\leq2\pi',"FontSize",20)
legend([hx1,hx2],{'sin(x)','cos(x)'},'Location','best')
hold on
x2 = x(1:10:end);
% x2 = 0:(2*pi)/10:2*pi;
% x2 = linspace(0,2*pi,10)
plot(x2,sin(x2),'v','MarkerSize',10,'MarkerFaceColor','b')
hold on
plot(x2,cos(x2),'p','MarkerSize',10,'MarkerFaceColor','b')
% set(gca,'MarkerSize',10)
% set(gca,)
hold off
```



間隔10個點 使用 x(1:10:end)

2.

(a)

```
clear;clc;clf
[x,y,z] = peaks
```

```
x = 49×49
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250 ···
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250
   -3.0000   -2.8750   -2.7500   -2.6250   -2.5000   -2.3750   -2.2500   -2.1250
      ⋮

y = 49×49
   -3.0000   -3.0000   -3.0000   -3.0000   -3.0000   -3.0000   -3.0000   -3.0000 ···
   -2.8750   -2.8750   -2.8750   -2.8750   -2.8750   -2.8750   -2.8750   -2.8750
   -2.7500   -2.7500   -2.7500   -2.7500   -2.7500   -2.7500   -2.7500   -2.7500
   -2.6250   -2.6250   -2.6250   -2.6250   -2.6250   -2.6250   -2.6250   -2.6250
   -2.5000   -2.5000   -2.5000   -2.5000   -2.5000   -2.5000   -2.5000   -2.5000
   -2.3750   -2.3750   -2.3750   -2.3750   -2.3750   -2.3750   -2.3750   -2.3750
   -2.2500   -2.2500   -2.2500   -2.2500   -2.2500   -2.2500   -2.2500   -2.2500
   -2.1250   -2.1250   -2.1250   -2.1250   -2.1250   -2.1250   -2.1250   -2.1250
   -2.0000   -2.0000   -2.0000   -2.0000   -2.0000   -2.0000   -2.0000   -2.0000
```

```
   -1.8750   -1.8750   -1.8750   -1.8750   -1.8750   -1.8750   -1.8750   -1.8750
     ⋮
     ⋮
z = 49×49
    0.0001    0.0001    0.0002    0.0004    0.0007    0.0011    0.0017    0.0025 ···
    0.0001    0.0002    0.0004    0.0006    0.0010    0.0017    0.0026    0.0037
    0.0002    0.0003    0.0005    0.0009    0.0016    0.0025    0.0038    0.0055
    0.0002    0.0004    0.0008    0.0014    0.0023    0.0036    0.0055    0.0079
    0.0003    0.0006    0.0011    0.0019    0.0032    0.0051    0.0077    0.0110
    0.0004    0.0008    0.0015    0.0026    0.0044    0.0070    0.0106    0.0151
    0.0005    0.0010    0.0019    0.0034    0.0058    0.0093    0.0141    0.0203
    0.0007    0.0013    0.0024    0.0043    0.0073    0.0118    0.0182    0.0266
    0.0007    0.0015    0.0028    0.0051    0.0088    0.0145    0.0227    0.0337
    0.0008    0.0015    0.0030    0.0056    0.0100    0.0168    0.0270    0.0410
     ⋮
     ⋮
```

```
figure(2)
pcolor(x,y,z)
% shading interp % 做線性內插（減少色階差異）
colorbar('v')

m = colormap('jet') %三個column代表RGB
```

```
m = 5×3
         0    0.5000    1.0000
         0    1.0000    1.0000
    0.5000    1.0000    0.5000
    1.0000    1.0000         0
    1.0000    0.5000         0
```

(b)

```
load tryc.txt %載入自己的資料變數,值為0到1之間的5*3陣列
colormap(tryc)
```

3.

```
clear;clc;clf
figure(3)
x = linspace(-2*pi,2*pi,100);
y = exp(-x.^2);
plot(x,y)
xlabel('0\leq x\leq2\pi')
ylabel('y=e^-^{x^2}')
get(gca,'position')
axes('position',[0.6 0.59 0.3 0.325])
y2 = exp(-x)
plot(x,y2)
text(0,400,'y = e^-^x',"FontSize",20)
```

4.(a)

```
clear;clc;clf
x = linspace(0,pi,50)
y = exp(-0.5.*x).*cos(x)
plot(x,y,'r--o','MarkerFaceColor','b','MarkerSize',20)
```

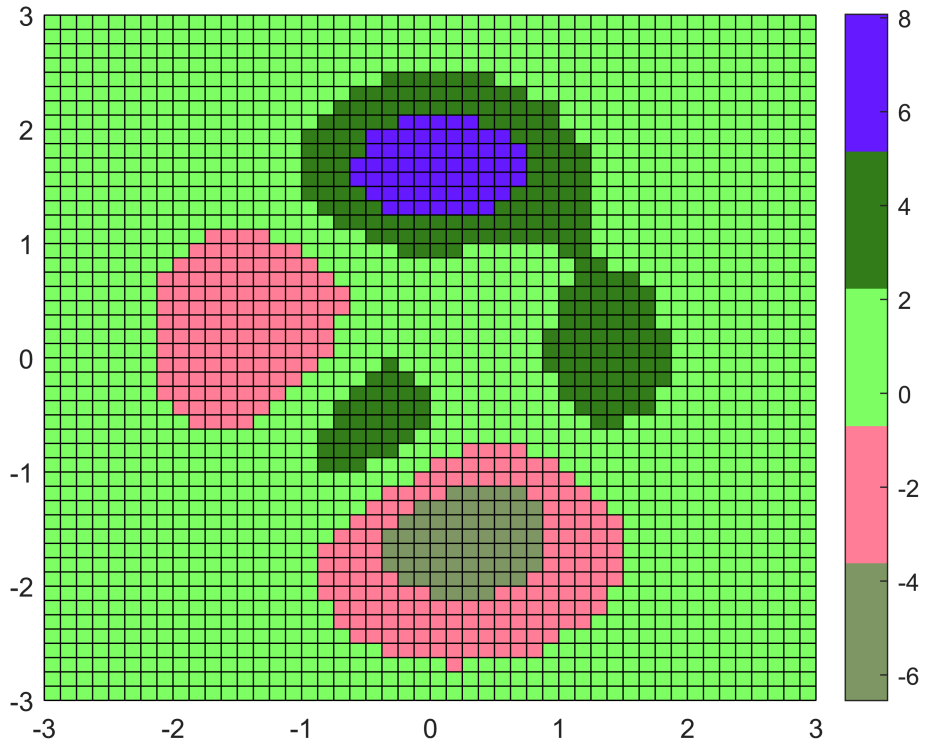
```
title('\it My plot(\rho,\xi)','FontName','Helvetica','FontSize',14)
```

5.

```
clear;clc;clf
x = linspace(-2*pi,2*pi,100)
y2 = exp(-x)
plot(x,y2)
text(0,400,'y = e^-^x','Color','r','FontName','times',"FontSize",20,"Rotation",45)
```

6.

```
clear;clc;clf
load kuroshio_grid.lat
load taiwan_coast.dat
c1 = 'kuroshio_grid'
c2 = 'taiwan_coast'
%%
cc1=eval(c1);
lon1 = cc1(100,3)
lat1 = cc1(100,4)
deep = cc1(100,5)
cc2=eval(c2);
lon2 = cc2(:,1)
lat2 = cc2(:,2)
%%
lon22 = reshape(kuroshio_grid(:,3),361,361);
lat22 = reshape(kuroshio_grid(:,4),361,361);
deep22 = reshape(kuroshio_grid(:,5),361,361);
deep22(deep22 == 1) = nan;
pcolor(lon22,lat22,deep22);shading interp
axis('image')
%% 以下是在考試中的打撞過程...
% fill(lon2,lat2,[77/255 137/255 37/255]);hold on; % fill : 塗色
% plot(lon2,lat2,'k');hold on;
% [x,y,dd] = meshgrid(lon1,lat1,deep)
% contour(x,y,dd)
% % [xx,yy] = meshgrid(lon1,lat1)
% % contour(lon1,lat1,deep)
```




```
ans = 1×4
    0.1300    0.1100    0.7750    0.8150
y2 = 1×100
  535.4917  471.6571  415.4321  365.9096  322.2905  283.8711  250.0315  220.2259 ···
x = 1×50
         0    0.0641    0.1282    0.1923    0.2565    0.3206    0.3847    0.4488 ···
y = 1×50
    1.0000    0.9665    0.9302    0.8916    0.8509    0.8085    0.7647    0.7199 ···
x = 1×100
   -6.2832   -6.1563   -6.0293   -5.9024   -5.7755   -5.6485   -5.5216   -5.3947 ···
y2 = 1×100
  535.4917  471.6571  415.4321  365.9096  322.2905  283.8711  250.0315  220.2259 ···
c1 =
'kuroshio_grid'
c2 =
'taiwan_coast'
lon1 = 115
lat1 = 19.1250
deep = 1.7504e+03
lon2 = 8432×1
       NaN
  121.7249
  121.8320
  121.9104
  121.8842
  121.8208
  121.6308
  121.5125
  121.4675
  121.3033
      ⋮
lat2 = 8432×1
       NaN
```

```
32.0313
31.9108
31.7366
31.6896
31.6846
31.7329
31.7854
31.8312
31.8837
   ⋮
```