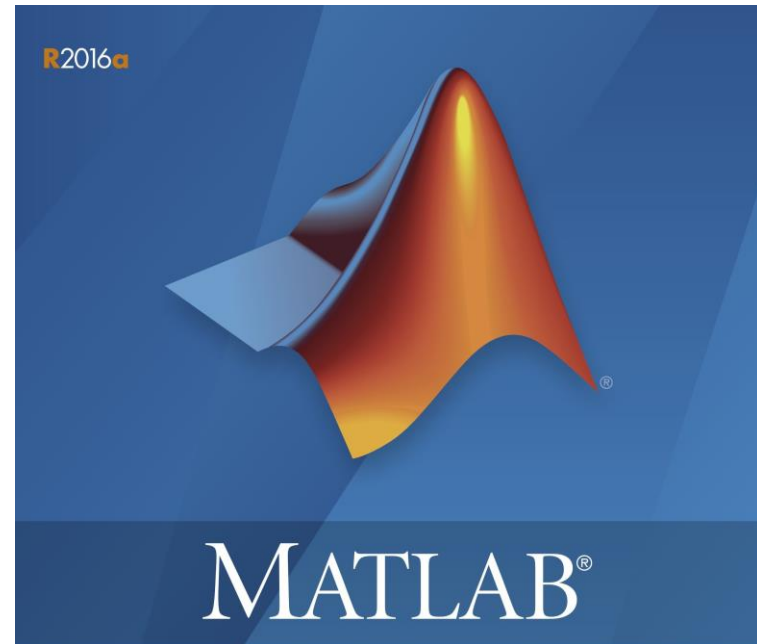


MATLAB

a short primer



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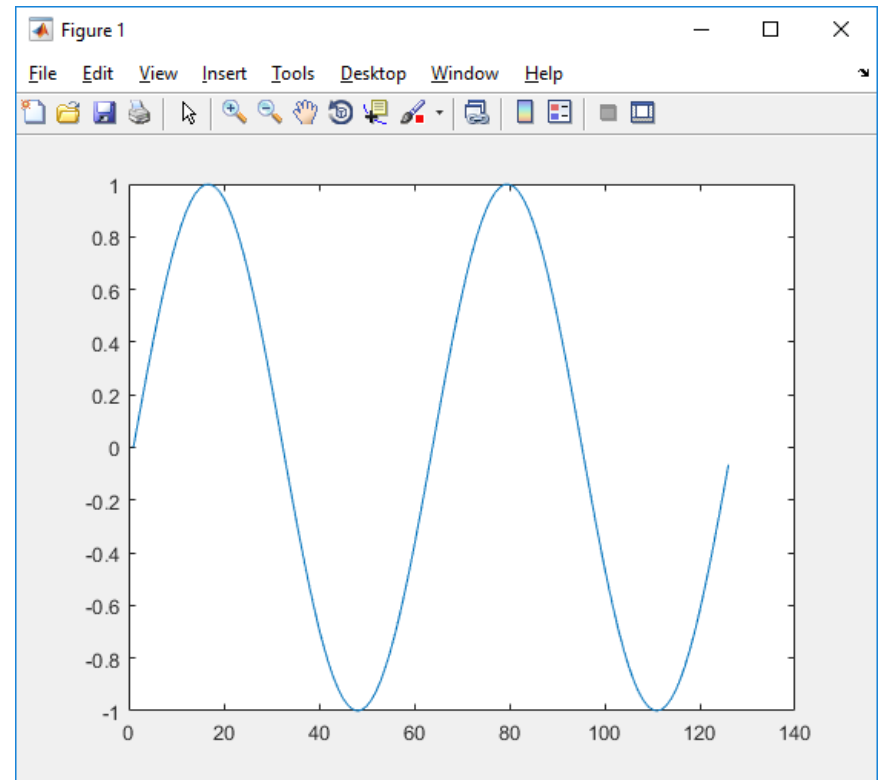
Part Five

Line and scatter plots

Line plots – one series

- Plotting in MATLAB is easy
- For line plots, use **plot**

```
% create data  
vector=[];  
for i=0:0.1:4*pi  
    vector=[vector;sin(i)];  
end;  
  
% plot the data  
plot(vector);
```



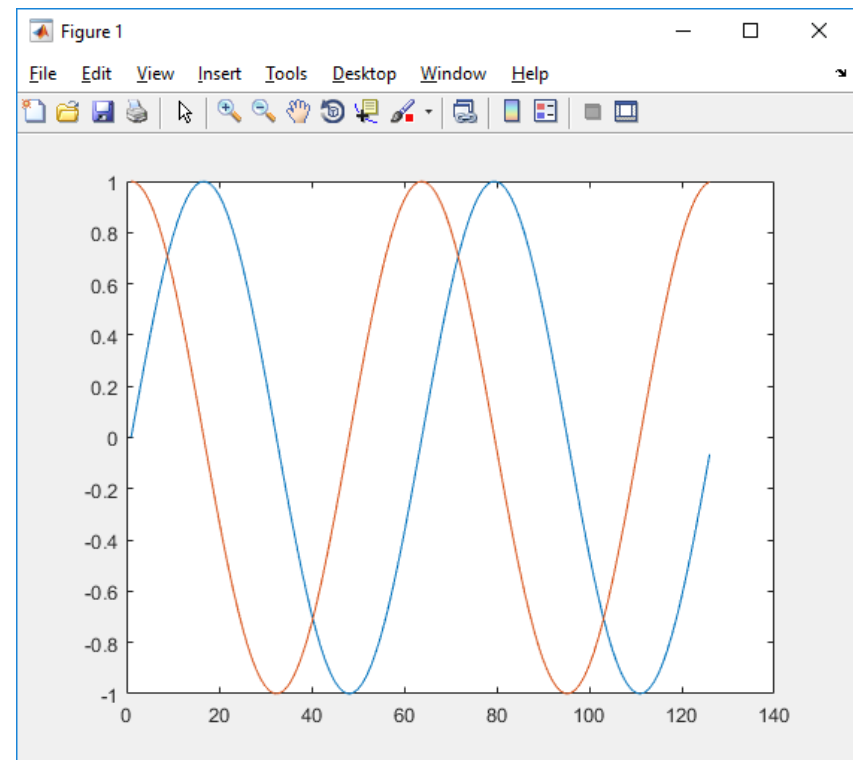
Line plots – two or more series

- Plot a matrix, with series as columns

```
% create data
sn=[];
csn=[];
for i=0:0.1:4*pi
    sn=[sn;sin(i)];
    csn=[csn;cos(i)];
end;

% create the matrix for plotting
dta=[sn csn];

% plot the data
plot(dta);
```

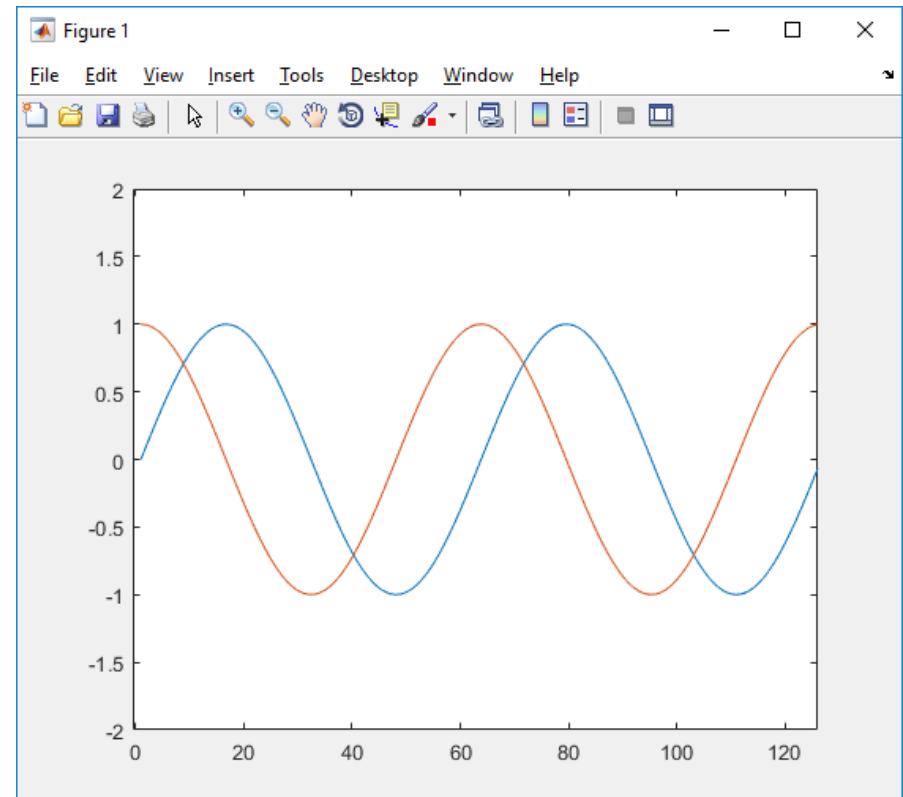


Setting axes limits

```
% set axis limits [xmin xmax ymin ymax]  
axis([-0.5 Inf -2 2])
```

```
% or
```

```
% each axis individually  
xlim([-0.5 Inf])  
ylim([-2 2])
```



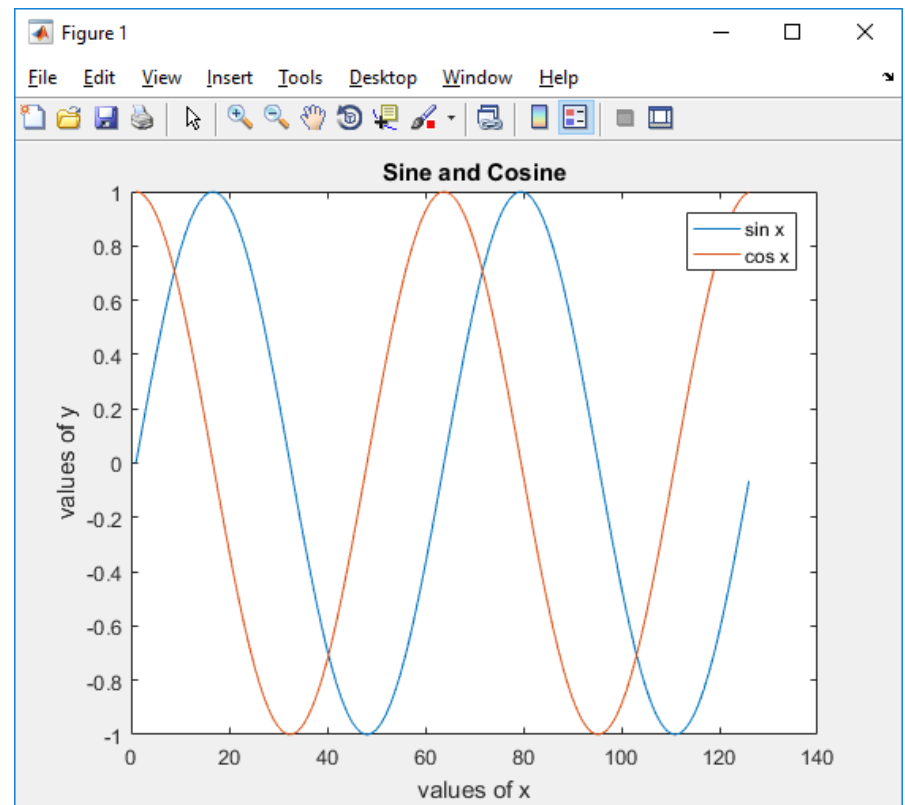
Adding axes labels, title, legend

```
% plot the data
plot(dta)

% add title
title('Sine and Cosine');

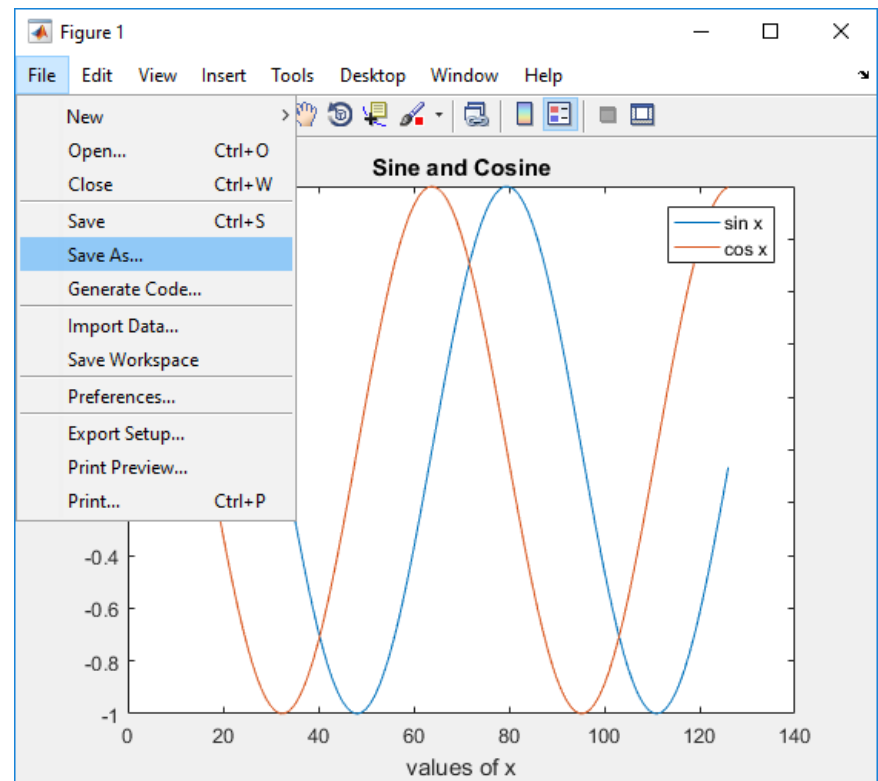
% add axis labels
xlabel('values of x');
ylabel('values of y');

% add legend
legend('sin x', 'cos x')
```



Saving your plot

- Save as:
- MATLAB Figure for Later editing
- Various types of images (jpg, bmp, svg)



Scatter plot

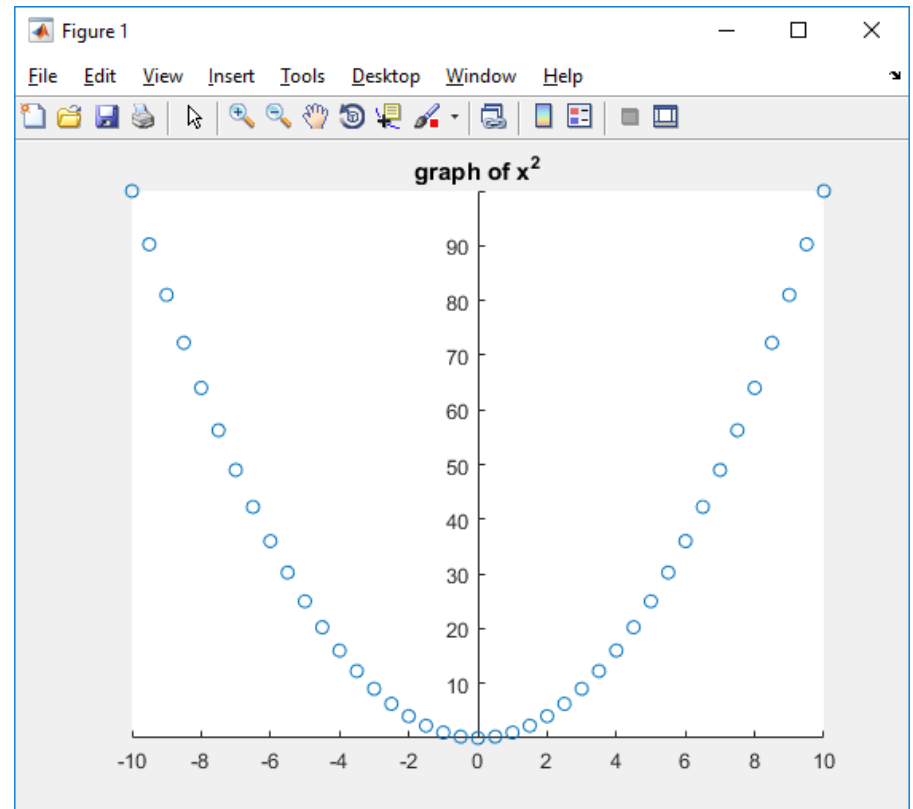
```
clear;
clc;

% create data
coordx=[];
coordy=[];
for i=-10:0.5:10
    coordx=[coordx;i];
    coordy=[coordy;i^2];
end;

% plot the data
scatter(coordx, coordy);

% query current figure
ax = gca;
% set y axis at origin
ax.YAxisLocation = 'origin';

% title
title('graph of x^2');
```



Several plots on the same figure

subplot (number of lines, number of columns, position)

subplot (2, 2, 3)

1	2
3	4

Several plots on the same figure

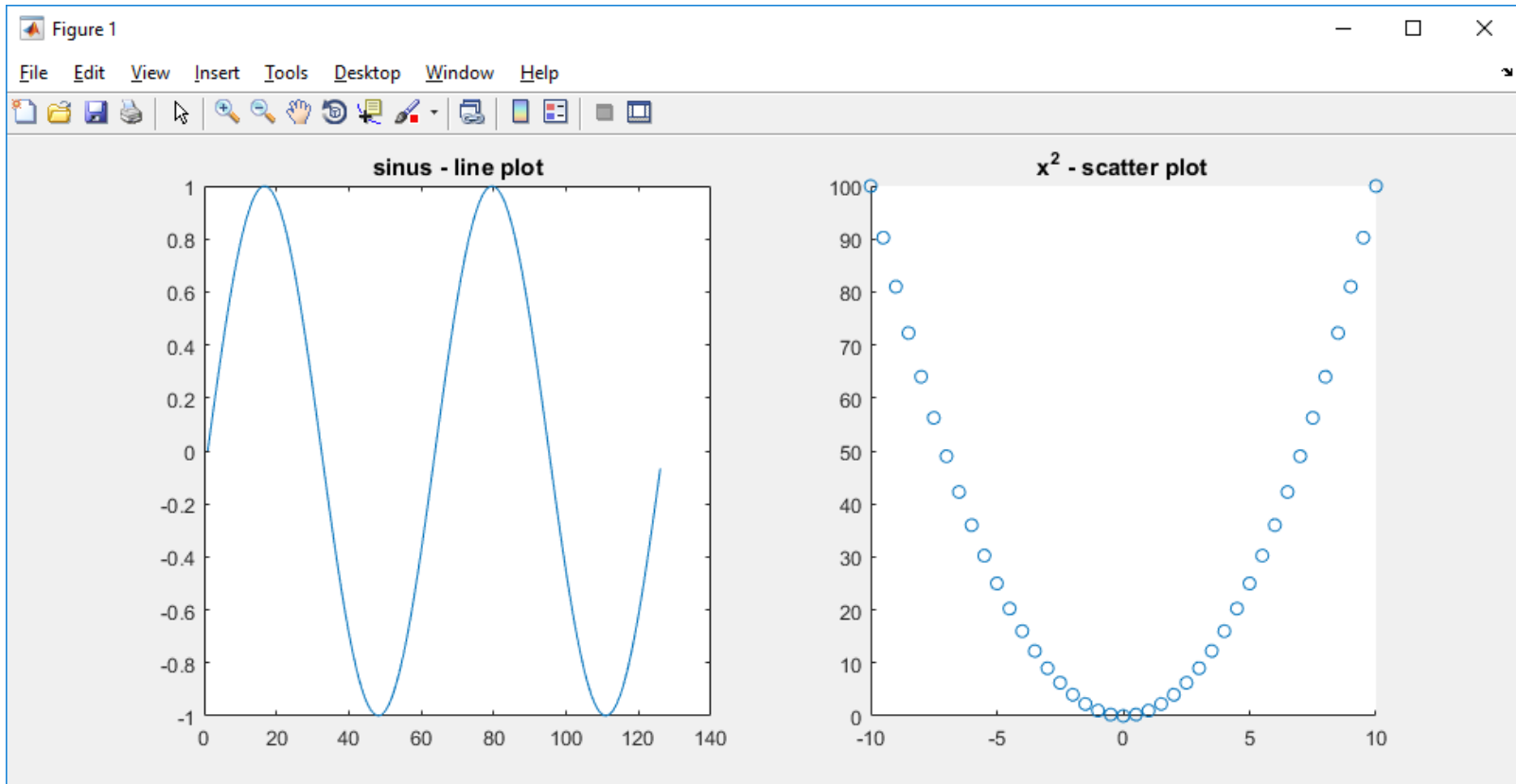
```
% function 1 - sine
sn=[];
for i=0:0.1:4*pi
    sn=[sn;sin(i)];
end;
```

```
% function 2 - x^2
coordx=[];
coordy=[];
for i=-10:0.5:10
    coordx=[coordx;i];
    coordy=[coordy;i^2];
end;
```

```
% plot
% sine graph
subplot (1,2,1);
plot(sn);
title('sinus - line plot');

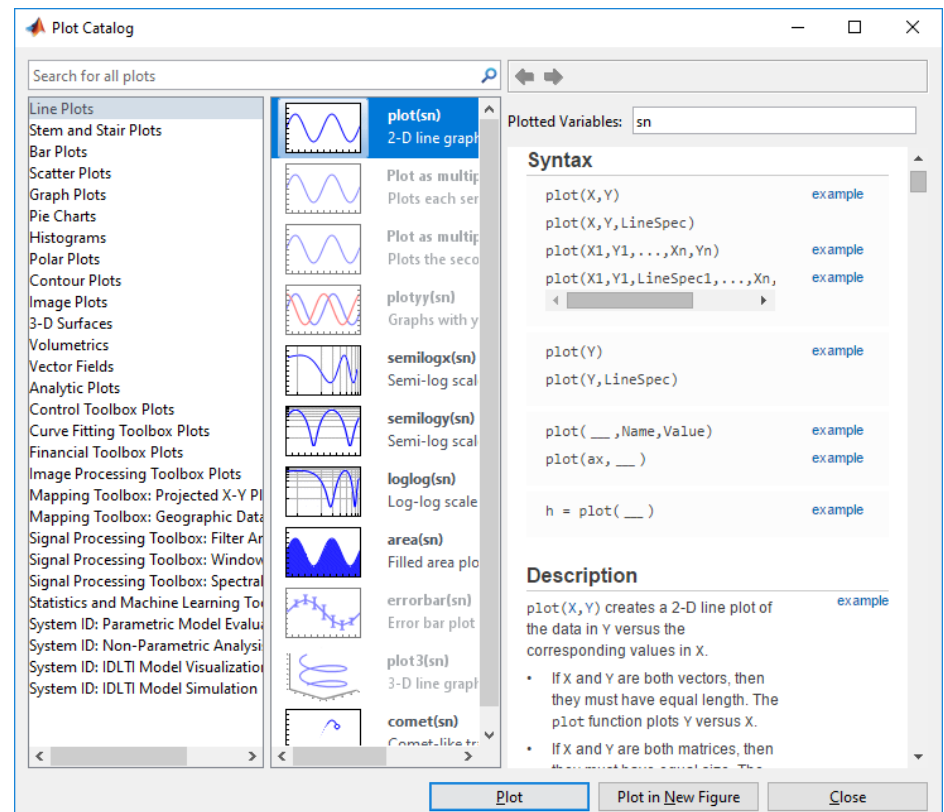
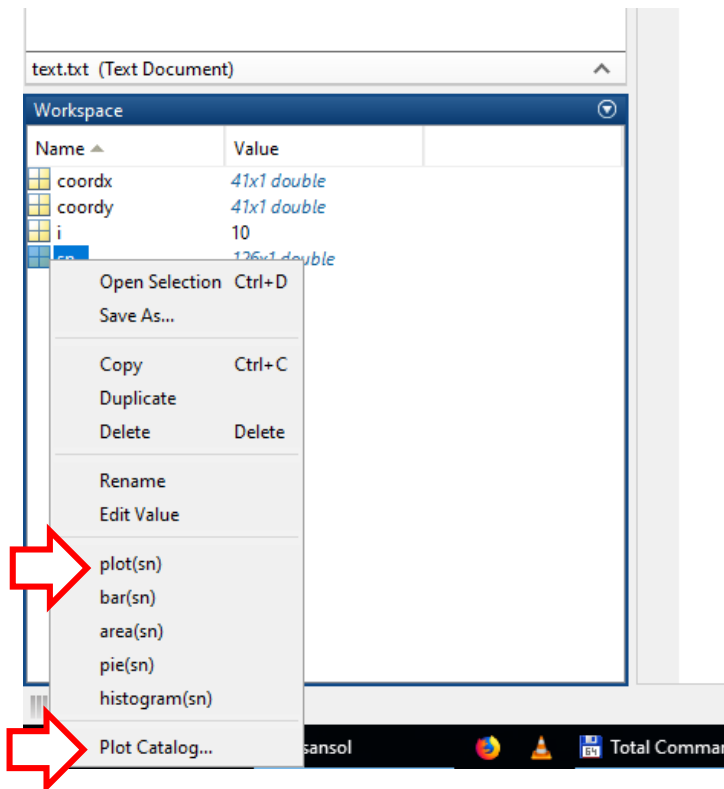
subplot (1,2,2);
scatter(coordx,coordy);
title('x^2 - scatter plot');
```

Several plots on the same figure



Plotting from the Workspace

- Right-click on the variable in the Workspace and select the desired plot type
- Or choose another type from the Plot Catalog



- **Plotting data**
 - Line and scatter plots
 - Adding title, axes labels, legend
 - Controlling axes
 - Multiple plots on the same figure

End of Part Five - Review

- **Feel free to contact me with questions !**

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THANK YOU !