MATLAB OKTATÁS
3. ELŐADÁS
DIAGRAMOK

Dr. Bécsi Tamás
Hegedüs Ferenc

WORKSPACE VÁLTOZÓK MENTÉSE

- save(filename)
- save(filename,variables)
- save(filename,variables,fmt)

save test.mat % command form
save('test.mat') % function form

- load(filename)
- load(filename,variables)
- load(filename,'-ascii')

Value of fmt	File Format
'-mat'	Binary MAT-file format.
'-ascii'	Text format with 8 digits of precision.
'-ascii','-tabs'	Tab-delimited text format with 8 digits of precision.
'-ascii','-double'	Text format with 16 digits of precision.
'-ascii','-double','-tabs'	Tab-delimited text format with 16 digits of precision.

MENTÉS PÉLDA

```
clear all;
close all;
a=1:0.1:10;
b=sin(a);
save('mintafile');
save('mintafilea','a');
save minta.txt a b -ascii
```

```
%%
clear all;
load('mintafile')
%%
clear all;
load('mintafile','a')
```

- figure parancs
  - létrehoz egy új képet
  - figure(n) –n szám azonosítóval hoz létre ábrát
- close
  - close (n) az n számmal, vagy a vektorban jelzett számokkal azonosított ábrákat bezárja
  - close all minden ábrát bezár

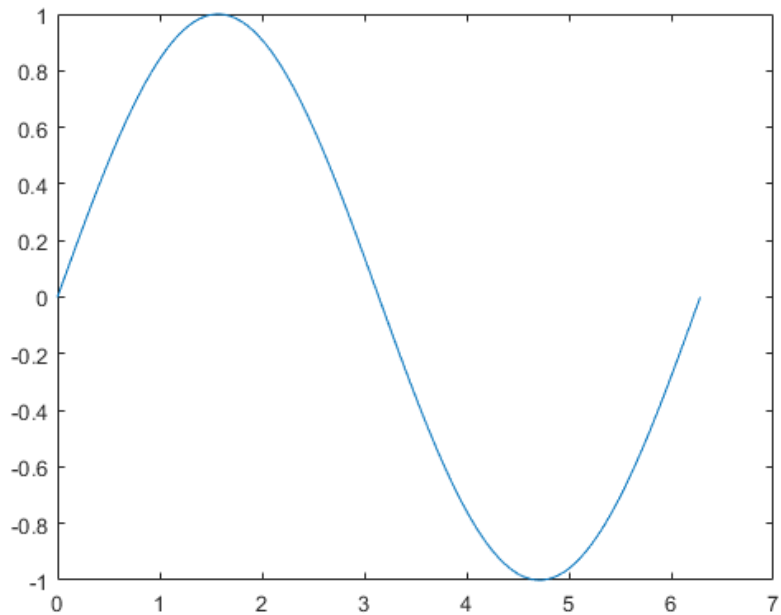# LINE PLOTS

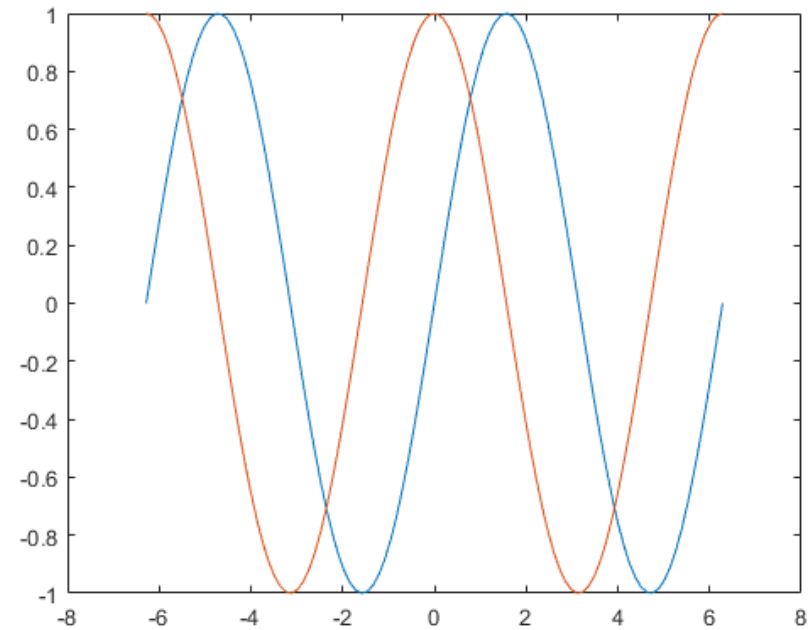| plot	2-D line plot
plot3	3-D line plot
loglog	Log-log scale plot
semilogx	Semilogarithmic plot
semilogy	Semilogarithmic plot
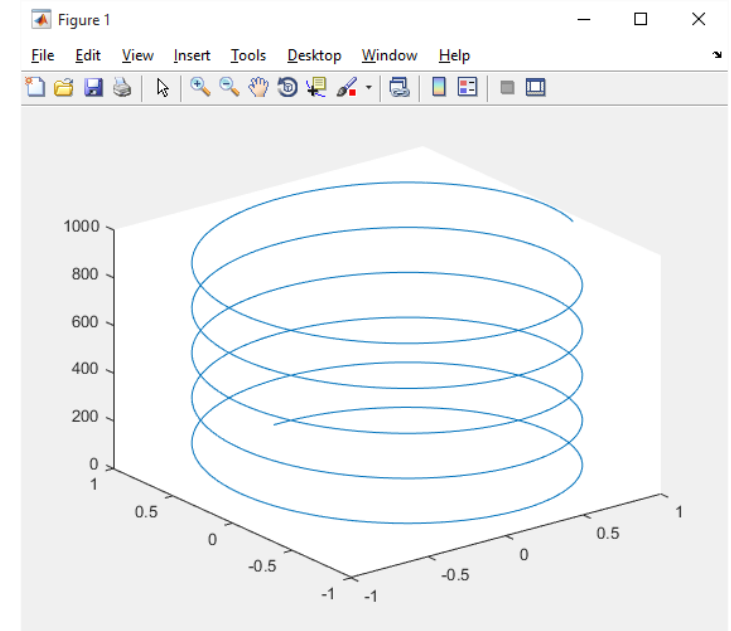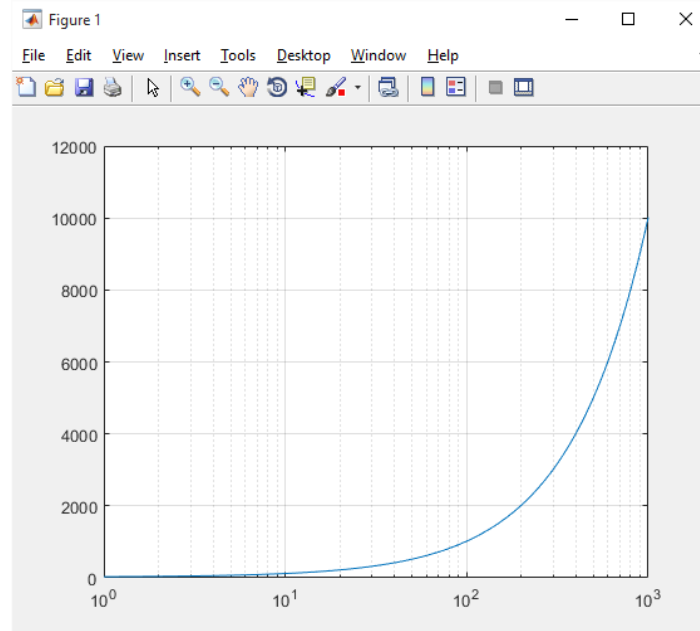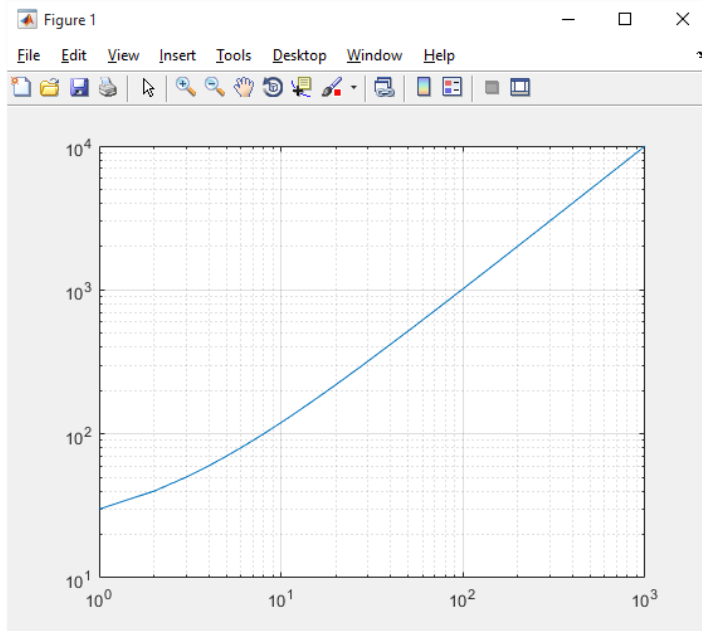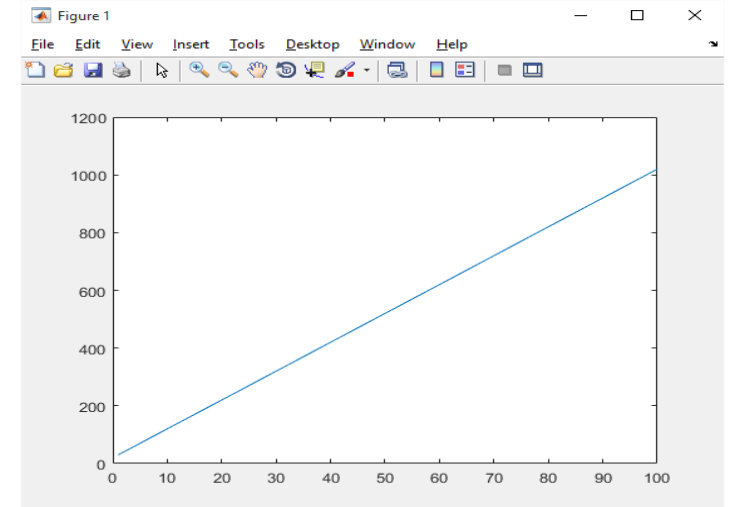
PLOT

x = 0:pi/100:2*pi;
y = sin(x);
Create a line plot of the data.
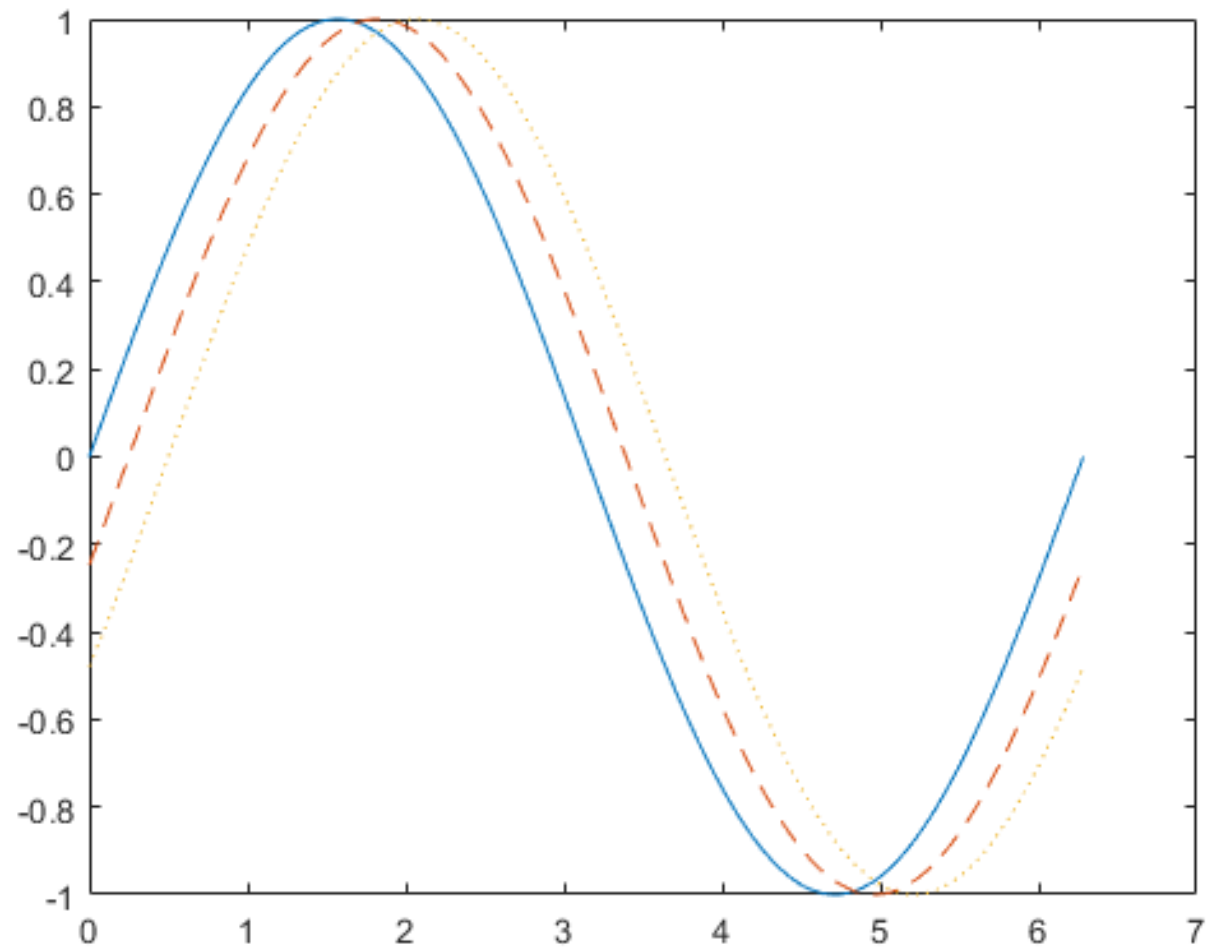figure % opens new figure window
plot(x,y)

x = linspace(-2*pi,2*pi);
y1 = sin(x);
y2 = cos(x);
figure
plot(x,y1,x,y2)

LINE STYLE

x = 0:pi/100:2*pi;
y1 = sin(x);
y2 = sin(x-0.25);
y3 = sin(x-0.5);

figure
plot(x,y1,x,y2,'--',x,y3,':')

LINE STYLE 2

-     Solid line (default)
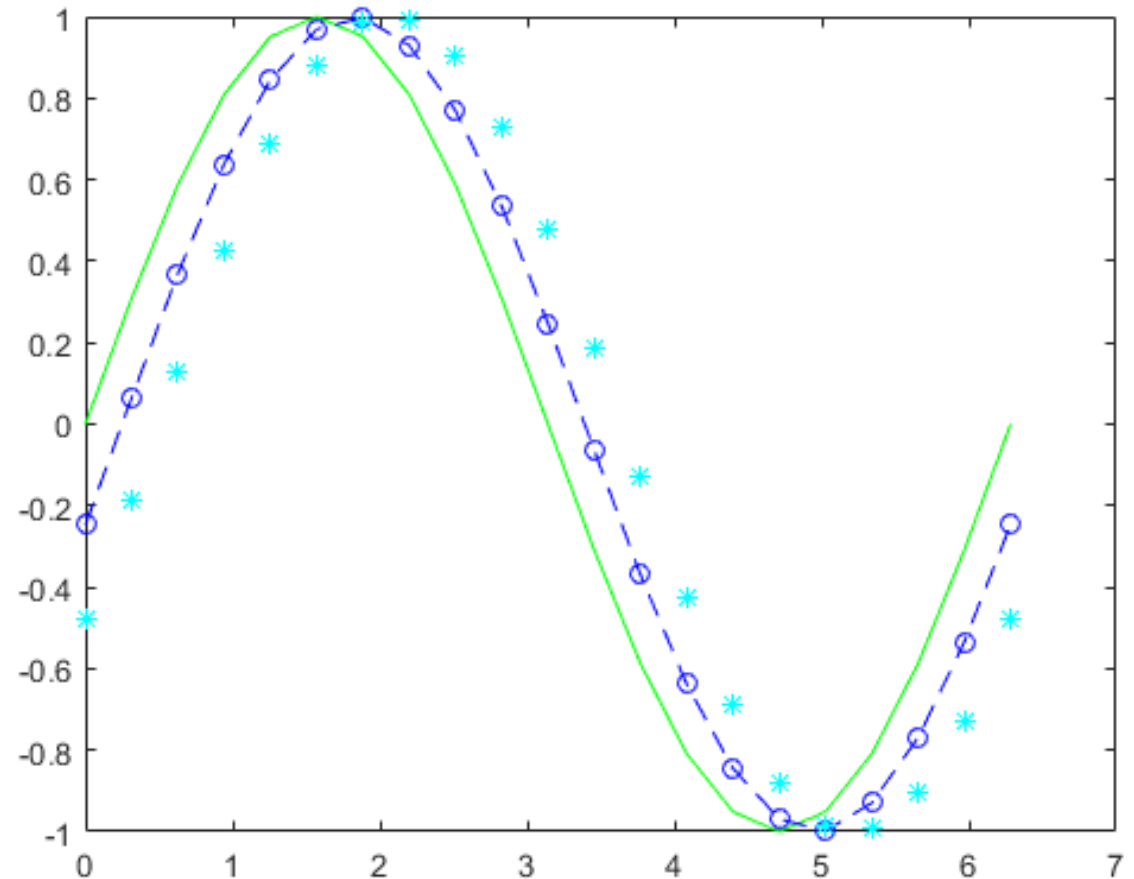--   Dashed line
:   Dotted line
-.   Dash-dot line

o   Circle
+   Plus sign
*   Asterisk
.   Point
x   Cross
s   Square
d   Diamond
^   Upward-pointing triangle
v   Downward-pointing triangle
>   Right-pointing triangle
<   Left-pointing triangle
p   Pentagram
h   Hexagram

y   yellow
m   magenta
c   cyan
r   red
g   green
b   blue
w   white
k   black

LINE STYLE 3

```
x = 0:pi/10:2*pi;
y1 = sin(x);
y2 = sin(x-0.25);
y3 = sin(x-0.5);
figure
plot(x,y1,'g',x,y2,'b--o',x,y3,'c*')
```
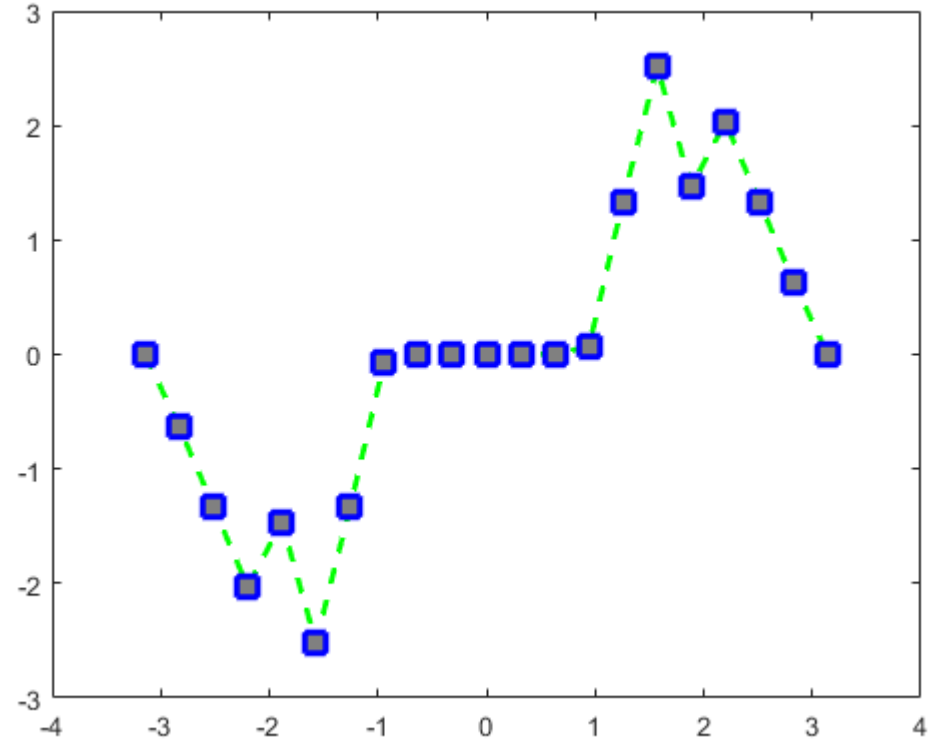
```
x = -pi:pi/10:pi;
y = tan(sin(x)) - sin(tan(x));

figure
plot(x,y,'--gs',...
    'LineWidth',2,...
    'MarkerSize',10,...
    'MarkerEdgeColor','b',...
    'MarkerFaceColor',[0.5,0.5,0.5])
```

LineWidth — Specifies the width (in points) of the line.
MarkerEdgeColor — Specifies the color of the marker or the edge color for filled markers (circle, square, diamond, pentagram, hexagram, and the four triangles).
MarkerFaceColor — Specifies the color of the face of filled markers.
**MarkerSize** — Specifies the size of the marker in points (must be greater than 0).

| title	Add title to axes or legend
xlabel	Label x-axis
ylabel	Label y-axis
zlabel	Label z-axis
legend	Add legend to graph
hold	on/off Retain current plot when adding new plots
grid	on/off Display or hide axes grid lines
axis	[xmin xmax ymin ymax] Set the x-axis limits to range from xmin to xmax. Set the y-axis limits to range from ymin to ymax.

FORMATTING EXAMPLE

```
x=1:0.1:10;
y1=sin(x);
y2=sin(x+pi/8);
figure(1);
plot(x,y1,'r');
hold on;
plot(x,y2,'b');
title('Fontos plot');
xlabel('X tengely');
ylabel('Y tengely');
grid on;
legend('sin(x)','sin(x+pi/8)');
axis([0,12,-2,2]);
```
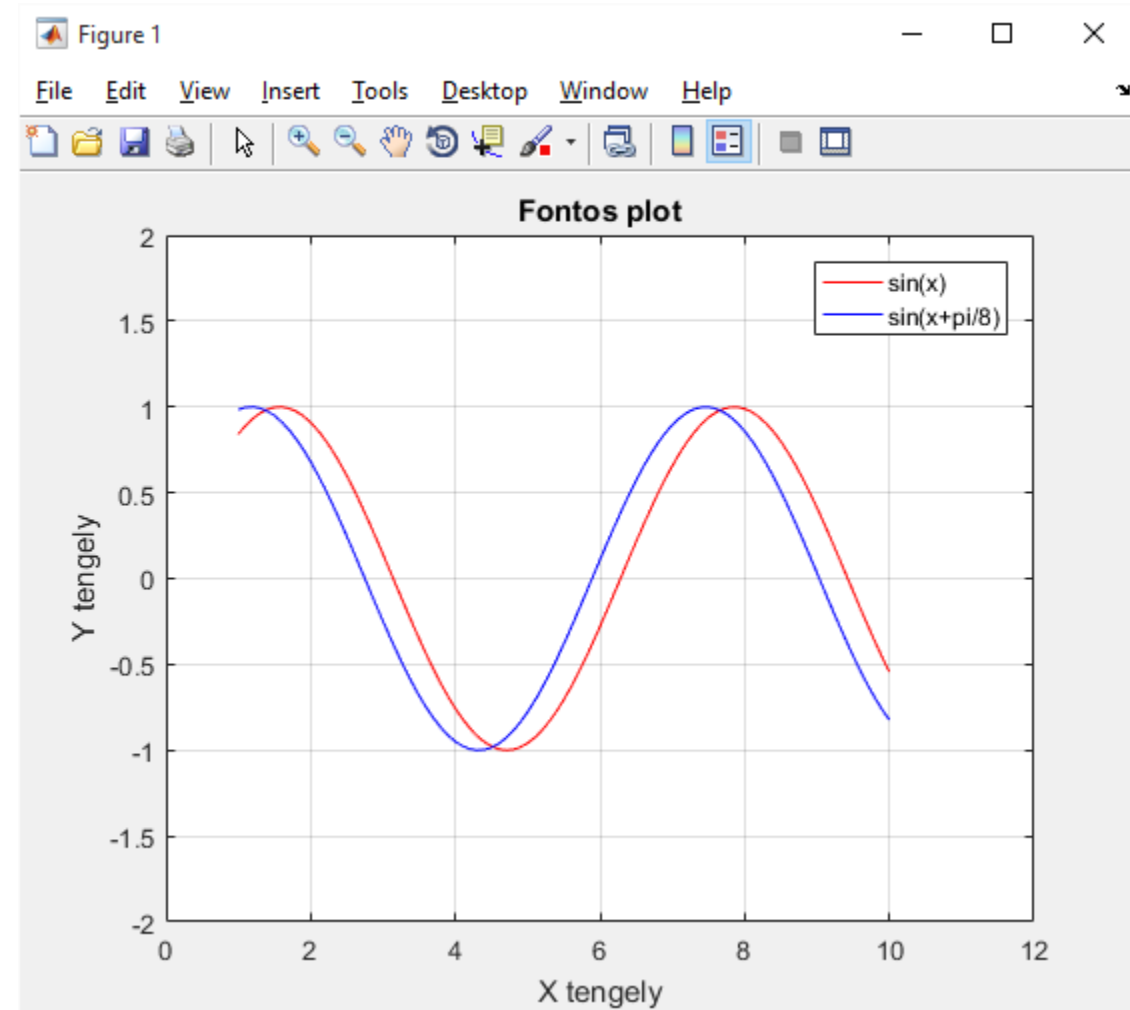
SUBPLOT

```matlab
figure(1);
x=1:0.1:10;
y1=sin(x);
y2=sin(x+pi/8);
y3=sin(2*x);
y4=sin(4*x);
subplot(2,2,1);
plot(x,y1);
title('1');grid on;
subplot(2,2,2);
plot(x,y2);
title('2');
……
```
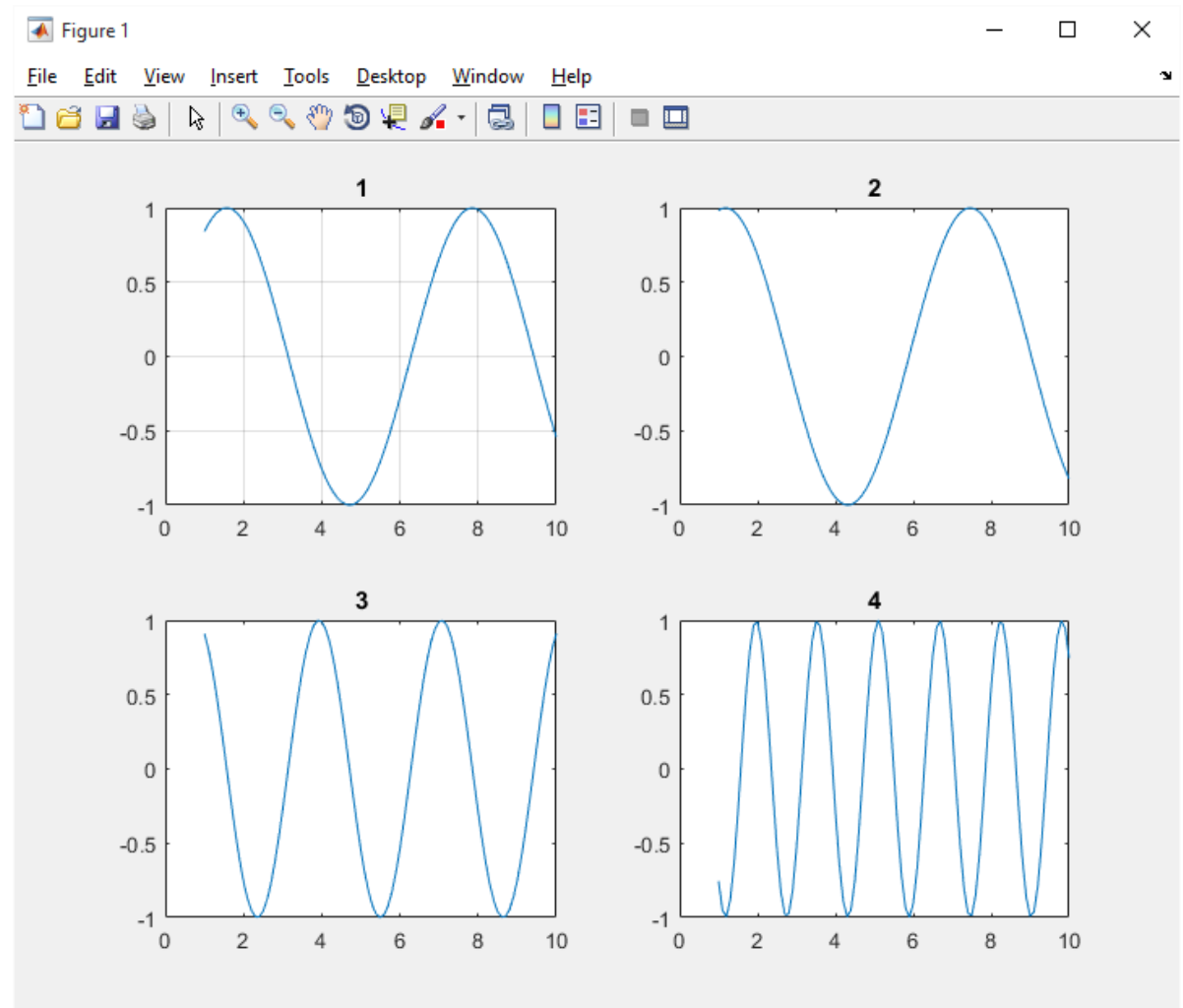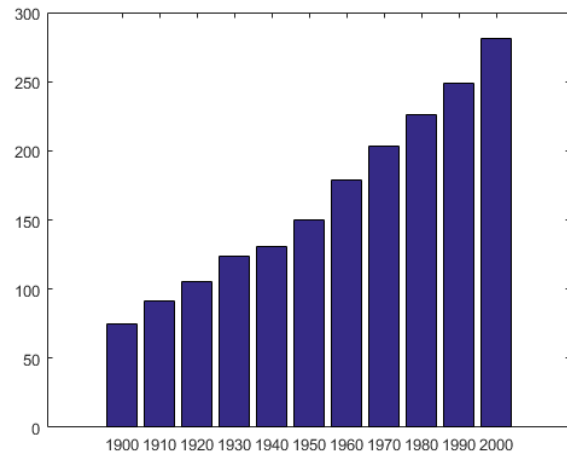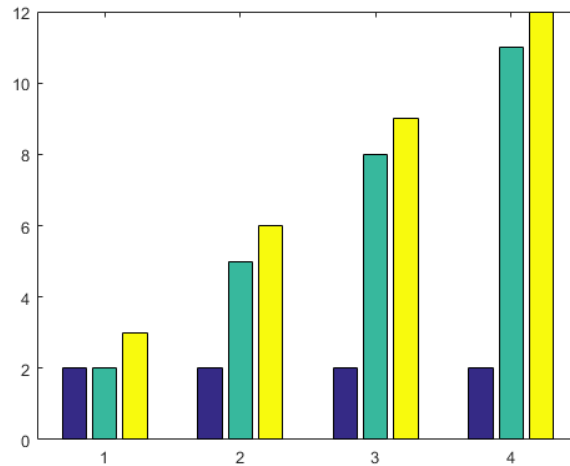
- ## bar(y)
- ## bar(x,y)

x = 1900:10:2000;
y = [75 91 105 123.5 131 150 179 203 226 249 281.5];
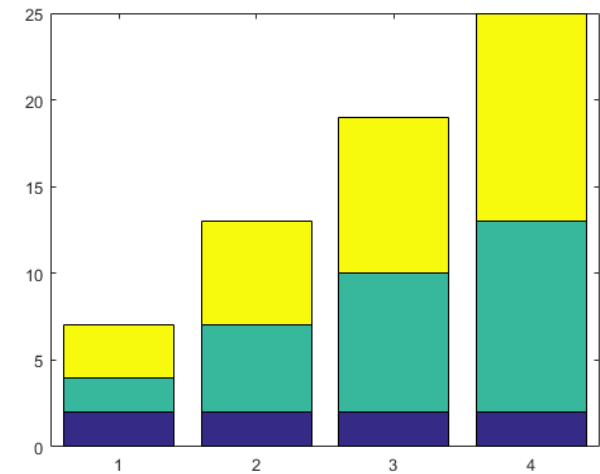bar(x,y)

y = [2 2 3; 2 5 6; 2 8 9; 2 11 12];
bar(y)

y = [2 2 3; 2 5 6; 2 8 9; 2 11 12];
bar(y,'stacked')

BAR3 PLOTS

- bar3(y)
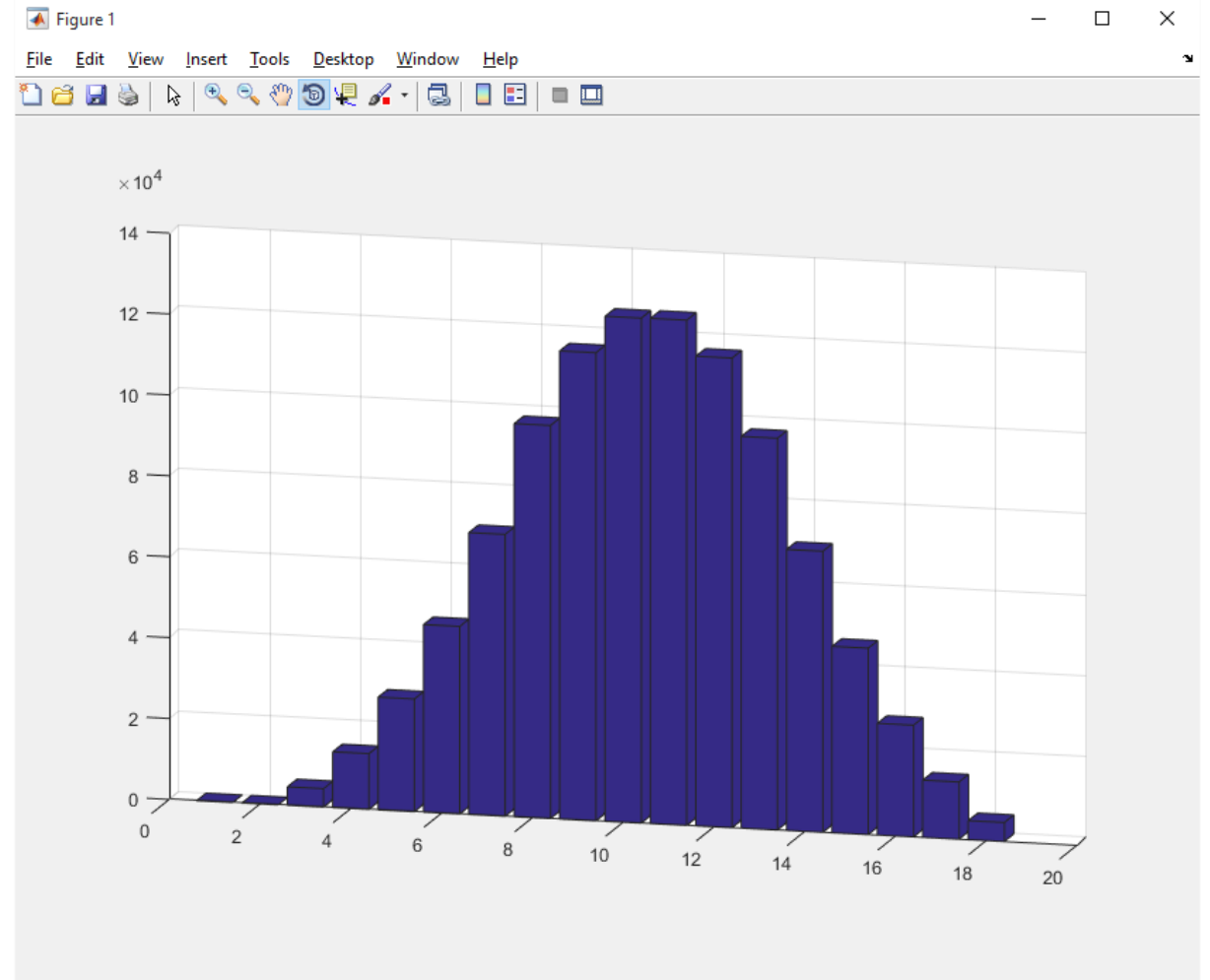- bar3(x,y)

```
%3 dobókocka összege
x=1:18;
y=zeros(1,18);
for i=1:1000000
s=floor(rand*6)+
    floor(rand*6)+floor(rand*6)+3;
y(s)=y(s)+1;
end
figure(1);
bar3(x,y);
```
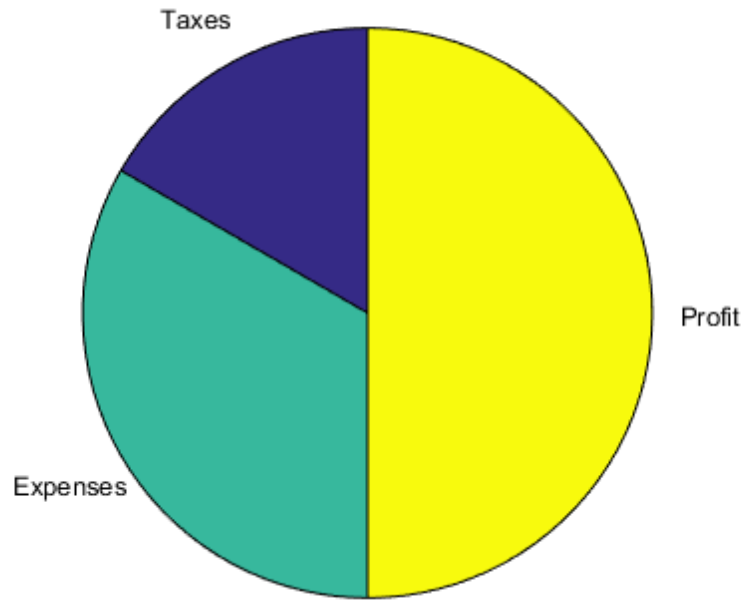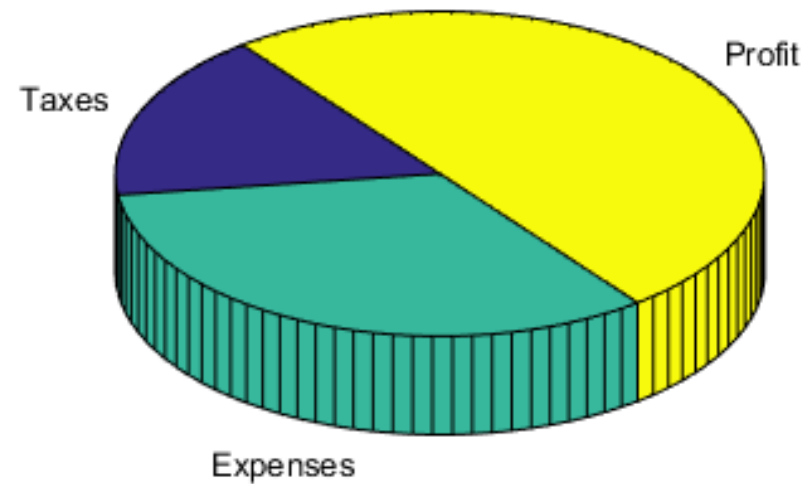
PIE

X = 1:3;
labels = {'Taxes','Expenses','Profit'};
pie(X,labels)

x = 1:3;
labels = {'Taxes','Expenses','Profit'};
pie3(x,labels)

SURF

```
x=-4:0.1:4;
y=-4:0.1:4;
z=sin(x'*y);
surf(x,y,z);
```