۵. توابع گرافیکی و ترسیم نمودار

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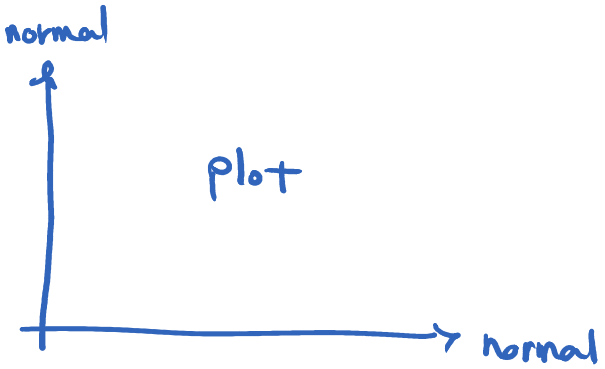
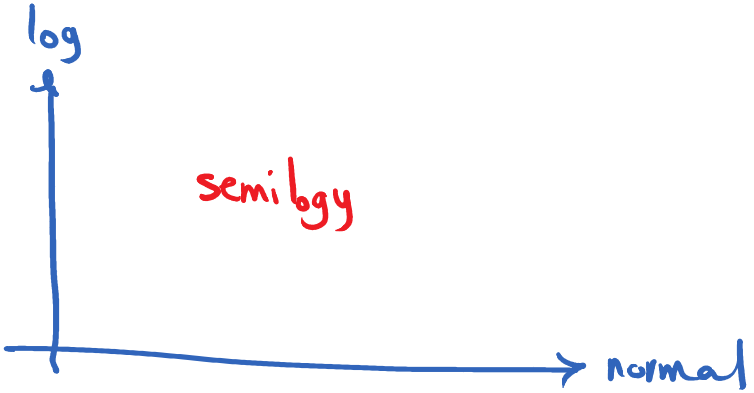
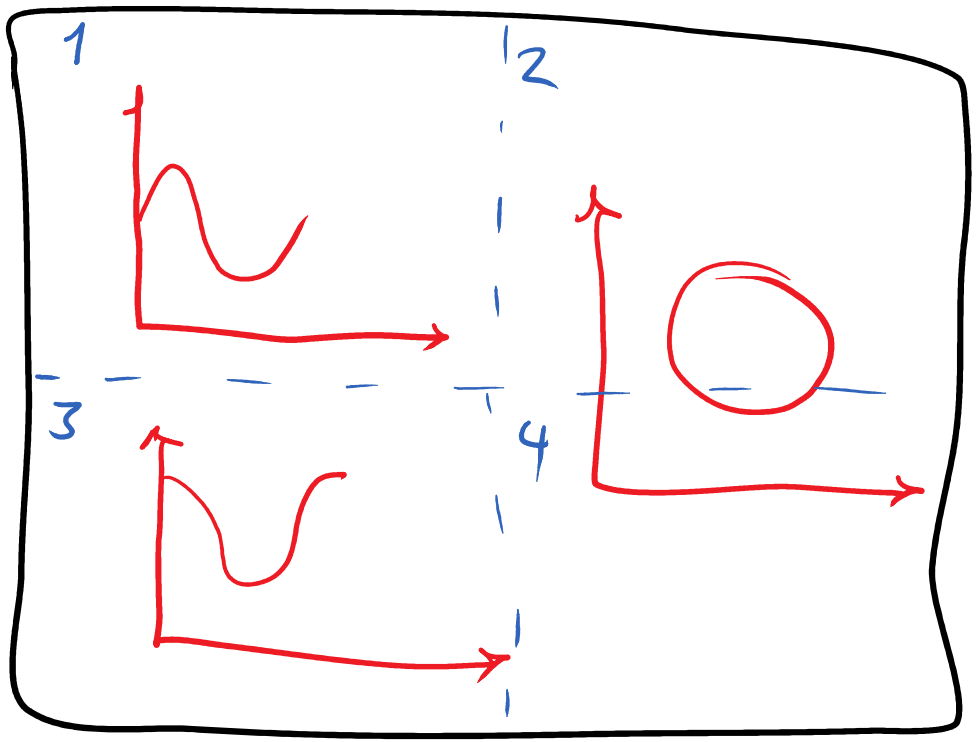
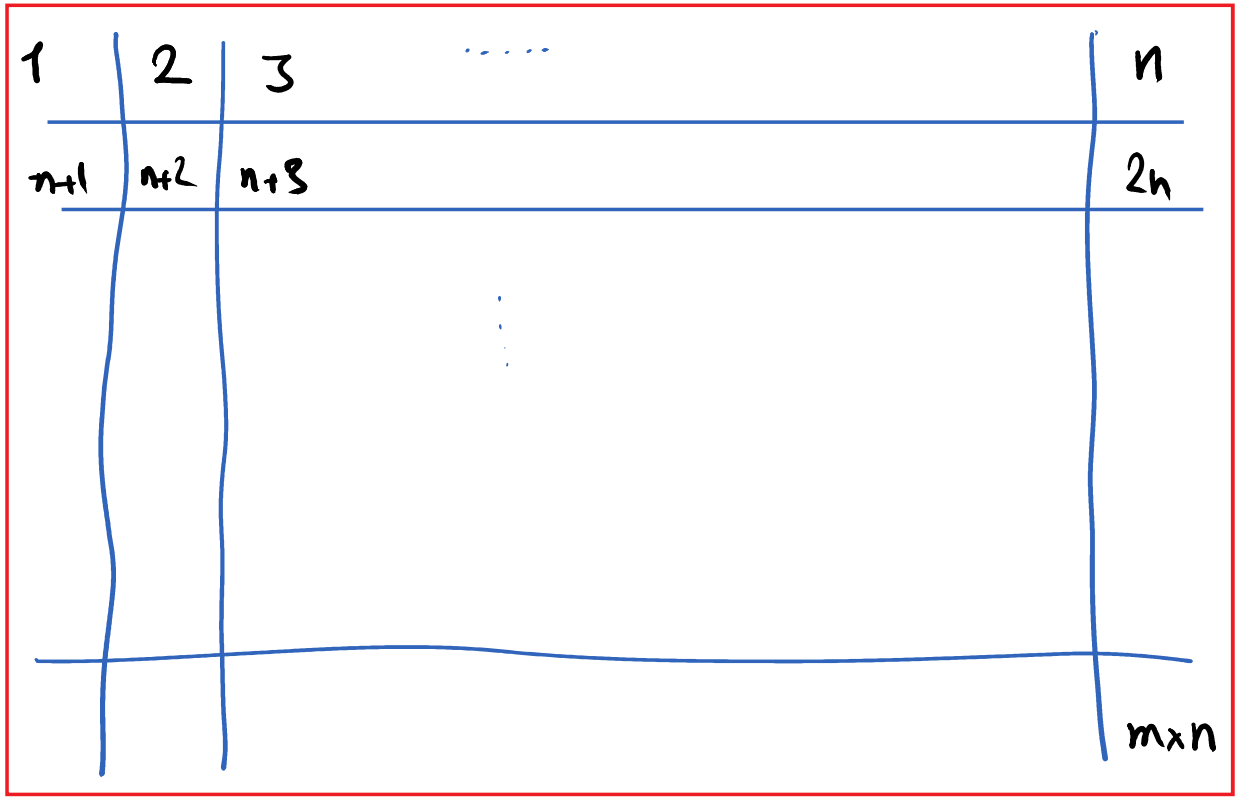

normal
plot
normal


log
semilogy
normal


normal
semilogx
log


log
loglog
log


1
2
3
4



subplot(m , n , i)

$$d = x_0 + v_0 t + \frac{1}{2} a t^2$$

$$v = v_0 + at$$

Polar plots

$$r = 2a(1 + \cos\theta)$$

$$a = 2.5$$

$$0 < \theta < 2\pi$$

$$r = (1 + \cos\theta)$$

$x = f_1(t)$

$y = f_2(t)$

$z = t$

$x(t) = e^{-0.2t} \cos(2t)$

$y(t) = e^{-0.2t} \sin(2t)$

$z(t) = t$

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plot3(x, y, z)
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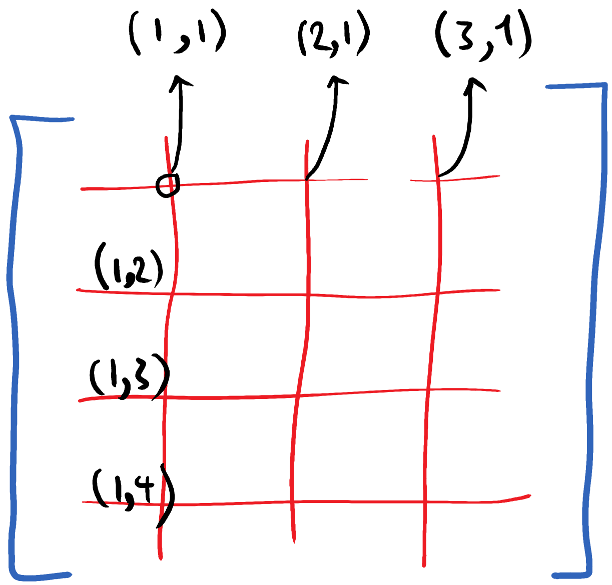
$$z(x,y) = \sqrt{x^2 + y^2}$$

x	y
1	1
2	2
3	3
	4



z
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$$X = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 2 & 3 \\ 1 & 2 & 3 \\ 1 & 2 & 3 \end{bmatrix}$$

$$Y = \begin{bmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \\ 3 & 3 & 3 \\ 4 & 4 & 4 \end{bmatrix}$$

$$Z = \sqrt{X^2 + Y^2} = \begin{bmatrix} & \\ & \end{bmatrix}_{4\times 3}$$

surf(X, Y, Z)

$$-0.5\left(x^2 + 0.5(x-y)^2\right)$$

$$Z(x,y) = e$$

معادلات در فضای سه بعدی:

$$x = r \cos\phi \cos\theta$$

$$y = r \cos\phi \sin\theta$$

$$z = r \sin\phi$$

$$\phi : \left(\frac{-\pi}{2}, \frac{\pi}{2}\right) \qquad \theta : (-\pi, \pi)$$

implicit

$f(x,y) = 0$

$f(x,y) = x^2 - y^2 - 1 = 0 \quad \Longrightarrow \quad y = \pm\sqrt{x^2 - 1}$

$f_{implicit}$

$$fun = \left(\sin^2(x) + \cos^2(y) - z\right) = 0 \quad \longrightarrow \quad fimplicit3$$

$$z = \sin^2(x) + \cos^2(y)$$

$$\sin(xy) + \cos(xy) = 0.5$$

$$f = \sin(xy) + \cos(xy) - 0.5$$