

# Nonlinear minimization of functions.

- fmincon - Multidimensional constrained nonlinear minimization.
- fminsearch - Multidimensional unconstrained nonlinear minimization, by Nelder-Mead direct search method.
- fminunc - Multidimensional unconstrained nonlinear minimization.
- fseminf - Multidimensional constrained minimization, semi-infinite constraints.

# Çok değişkenli sınırsız optimizasyon

$$f(x) = (x_1^2 + x_2 - 11) + (x_1 + x_2^2 - 7)^2$$

```
function f=fun2(x);  
f=(x(1).^2+x(2)-11).^2+(x(1)+x(2).^2-7).^2;  
  
» x0=[0 0];  
» x=fminunc('fun2',x0)
```

x =

3.0000 2.0000

# Sınırlı optimizasyon çok değişkenli

$$\text{Min } f(x) = x_1^2 + x_2^2$$

Subject to

$$g_1(x) = x_1^2 - x_2 \geq 0$$

$$h_1(x) = 2 - x_1 - x_2^2 = 0$$

$$0.5 \leq x_1 \leq 2.5$$

$$0 \leq x_2 \leq 3$$

- `function g=fun3(x);`  
`g=x(1)^2+x(2)^2;`
  
- `function [c,ceq]=nonlin(x);`  
`c=2-x(1)-x(2)^2;`  
`ceq=-x(1)^2+x(2);`
  
- » `ub=[2.5 3];`
- » `lb=[.5 0];`
- » `x0=[5 5];`
- » `x=fmincon('fun3',x0,[],[],[],[],lb,ub,'nonlin') x =`

`X=[ 1.0000 1.0000 ]`