

Minimization

To find where a function attains its minimum on an interval we use the fmin command.

example

First we make a M-file.

```
*****  
function w= f(x)  
w=exp(-x^2+2*x) - .5;  
*****
```

To find where f attains its minimum on [-1,3] go to the command window and type:

```
*****  
xm=fmin('f(x)', -1,3)  
*****
```

To find the minimum value type:

```
*****  
f(xm)  
*****
```

NOTE f(x) maximizes where -f(x) minimizes. To find the maximum value of f(x) on [-1,3] type:

```
*****  
xM=fmin('-f(x)', -1,3);  
f(xM)  
*****
```

To find the maximum of abs(f(x)) on [-1,3] type:

```
*****  
xM=fmin('-abs(f(x))', -1,3);  
abs(f(xM))  
*****
```

ASSIGNMENT 2 :

Let

$$h(x)=x^3-6*x^2+x .$$

Graph h(x) on [-1,5] .

Find where h(x) maximizes on [-1,5] and its maximum value.

Find where h(x) minimizes on [-1,5] and its minimum value.