

```
>> a=[1,2,3,4]
```

```
a =
```

```
    1    2    3    4
```

```
>> b=[1;2;3;4]
```

```
b =
```

```
    1  
    2  
    3  
    4
```

```
>> c=[1,2,3;4,5,6]
```

```
c =
```

```
    1    2    3  
    4    5    6
```

```
fx >> |
```

```
>> a=[1,2,3,4]
```

```
a =
```

```
    1    2    3    4
```

```
>> b=[1;2;3;4]
```

```
b =
```

```
    1  
    2  
    3  
    4
```

```
>> c=[1,2,3;4,5,6]
```

```
c =
```

```
    1    2    3  
    4    5    6
```

```
fx >> clc
```

```
>> |
```

>> a

a =

1	2	3	4
---	---	---	---

>> b

b =

1
2
3
4

>> c

c =

1	2	3
4	5	6

fx >>

>> a

a =

1	2	3	4
---	---	---	---

>> b

b =

1
2
3
4

>> c

c =

1	2	3
4	5	6

fx >> clear all

>> a

a =

1	2	3	4
---	---	---	---

>> b

b =

1
2
3
4

>> c

c =

1	2	3
4	5	6

>> clear all

>> a

??? Undefined function or variable 'a'.

fx >>

>> a

a =

1	2	3	4
---	---	---	---

>> 2.*a

ans =

2	4	6	8
---	---	---	---

fx >> |

```
>> a=[1,2,3,4]
```

```
a =
```

```
     1     2     3     4
```

```
>> b=[5,10,15,20]
```

```
b =
```

```
     5    10    15    20
```

```
>> a.*b
```

```
ans =
```

```
     5    20    45    80
```

f_x >> |

```
>> a=[10,20]
```

```
a =
```

```
    10    20
```

```
>> b=[1,2;3,4]
```

```
b =
```

```
     1     2  
     3     4
```

```
>> a*b
```

```
ans =
```

```
    70   100
```

```
fx >> |
```

```
>> a=[1,5,6,7,5,7,8,9,5,4,2,3,3]
```

```
a =
```

```
    1    5    6    7    5    7    8    9    5    4    2    3    3
```

```
>> min(a)
```

```
ans =
```

```
    1
```

```
>> max(a)
```

```
ans =
```

```
    9
```

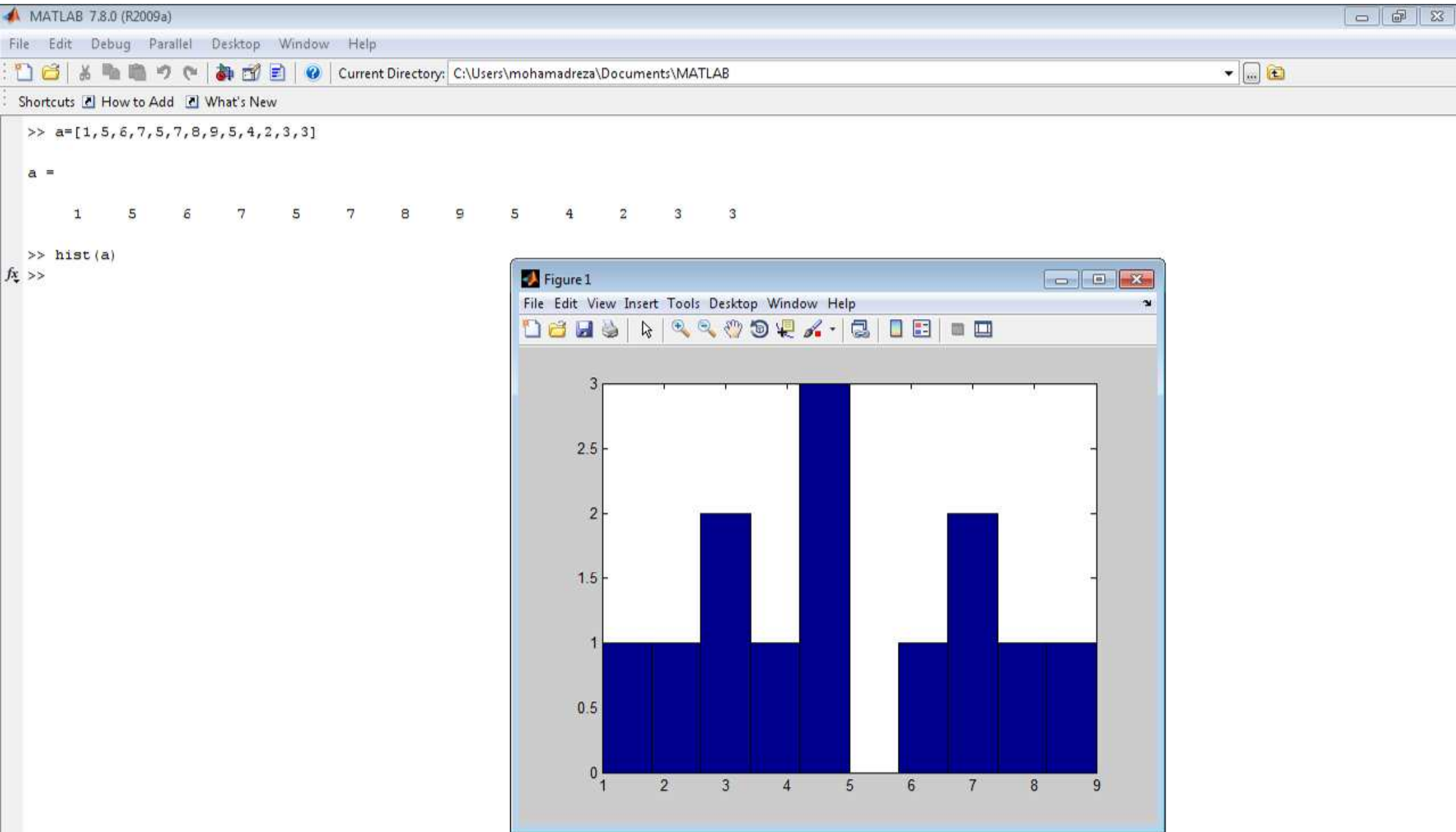
```
>> mean(a)
```

```
ans =
```

```
    5
```

```
>> hist(a)
```

```
fx >>
```



```
>> a=[1,5,6,7,5,7,8,9,5,4,2,3,3]
```

```
a =
```

```
    1    5    6    7    5    7    8    9    5    4    2    3    3
```

```
>> min(a)
```

```
ans =
```

```
    1
```

```
>> max(a)
```

```
ans =
```

```
    9
```

```
>> mean(a)
```

```
ans =
```

```
    5
```

```
>> hist(a)
```

```
>> hist(a)
```

```
>> sum(a)
```

```
ans =
```

```
   65
```

```
fx >>
```

>> a

a =

1	5	6	7	5	7	8	9	5	4	2	3	3
---	---	---	---	---	---	---	---	---	---	---	---	---

>> sort(a)

ans =

1	2	3	3	4	5	5	5	6	7	7	8	9
---	---	---	---	---	---	---	---	---	---	---	---	---

fx >> |

```
>> a=1+2i

a =

    1.0000 + 2.0000i

>> real(a)

ans =

     1

>> imag(a)

ans =

     2

>> abs(a)

ans =

    2.2361

>> angle(a)

ans =

    1.1071

>> conj(a)

ans =

    1.0000 - 2.0000i
```

```
>> a=5
```

```
a =
```

```
5
```

```
>> sqrt(a)
```

```
ans =
```

```
2.2361
```

```
>> exp(a)
```

```
ans =
```

```
148.4132
```

```
>> log(a)
```

```
ans =
```

```
1.6094
```

```
>> log10(a)
```

```
ans =
```

```
0.6990
```

```
fx >>
```

```
>> a=pi
```

```
a =
```

```
3.1416
```

```
>> sin(a)
```

```
ans =
```

```
1.2246e-016
```

```
>> cos(a)
```

```
ans =
```

```
-1
```

```
>> tan(a)
```

```
ans =
```

```
-1.2246e-016
```

```
>> cot(a)
```

```
ans =
```

```
-8.1656e+015
```

```
fx >>
```

```
>> zeros(2,3)
```

```
ans =
```

```
    0    0    0
    0    0    0
```

```
>> ones(4,5)
```

```
ans =
```

```
    1    1    1    1    1
    1    1    1    1    1
    1    1    1    1    1
    1    1    1    1    1
```

```
>> rand(3,4)
```

```
ans =
```

```
    0.8147    0.9134    0.2785    0.9649
    0.9058    0.6324    0.5469    0.1576
    0.1270    0.0975    0.9575    0.9706
```

```
fx >>
```

```
>> a=[1,4,5;3,7,9;1,6,9]
```

```
a =
```

```
     1     4     5
     3     7     9
     1     6     9
```

```
>> det(a)
```

```
ans =
```

```
    -8
```

```
>> inv(a)
```

```
ans =
```

```
   -1.1250    0.7500   -0.1250
    2.2500   -0.5000   -0.7500
   -1.3750    0.2500    0.6250
```

```
fx >> |
```

```
>> help sin  
SIN    Sine of argument in radians.  
SIN(X) is the sine of the elements of X.
```

See also [asin](#), [sind](#).

Overloaded methods:

[codistributed/sin](#)

[sym/sin](#)

Reference page in Help browser

[doc sin](#)

fx >> |

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sin

Sine of argument in radians

Syntax

$$Y = \sin(X)$$

Description

The `sin` function operates element-wise on arrays. The function's domains and ranges include complex values. All angles are in radians.

$Y = \sin(X)$ returns the circular sine of the elements of x .

Examples

Graph the sine function over the domain $-\pi \leq x \leq \pi$.

```
x = -pi:0.01:pi;
plot(x,sin(x)), grid on
```

