# Plotting

MIEET 1º ano

UAlg
UNIVERSIDADE DO ALGARVE

30 anos
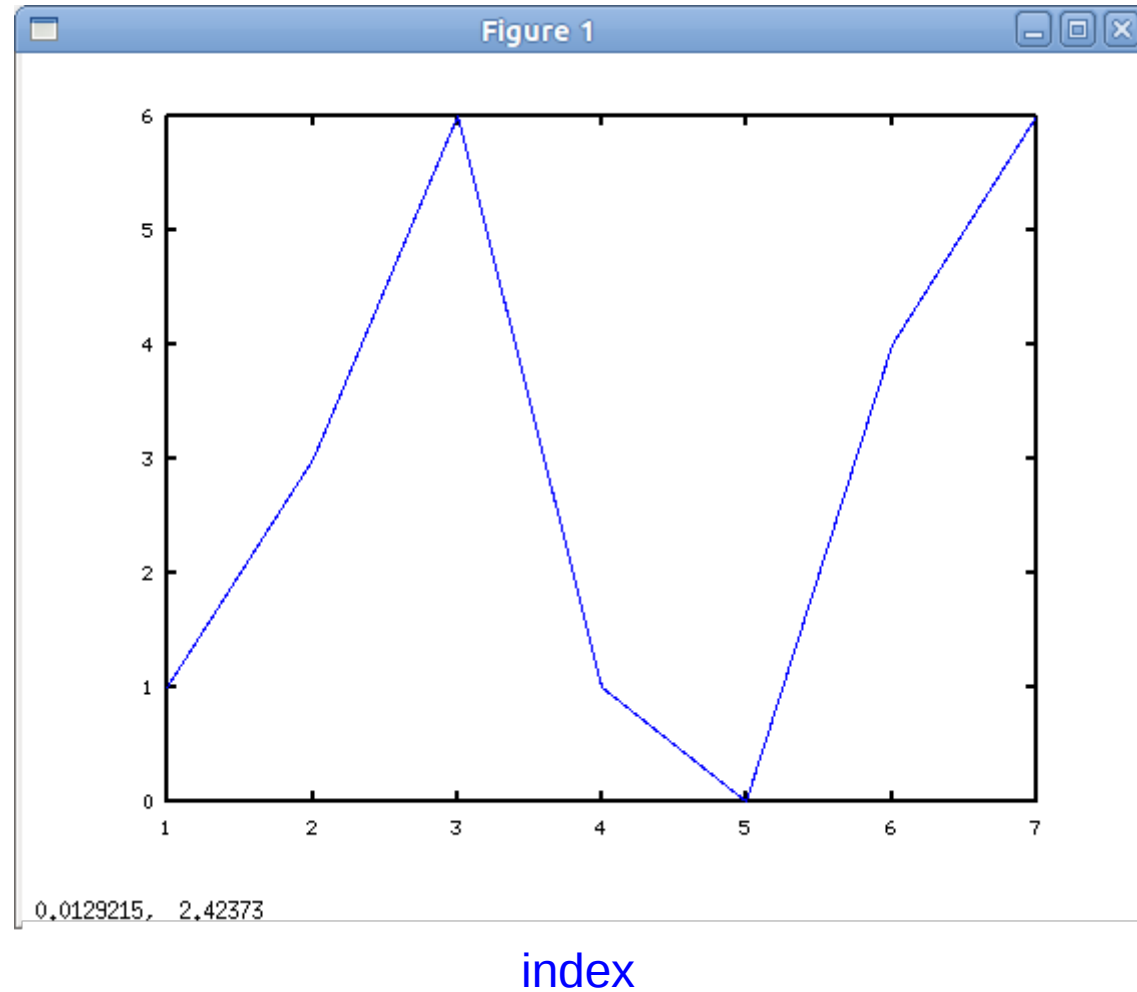1979 | 2009

Peter Stallinga UAlg 2011

# Vector

The simplest form of plotting is plotting a vector

## Octave
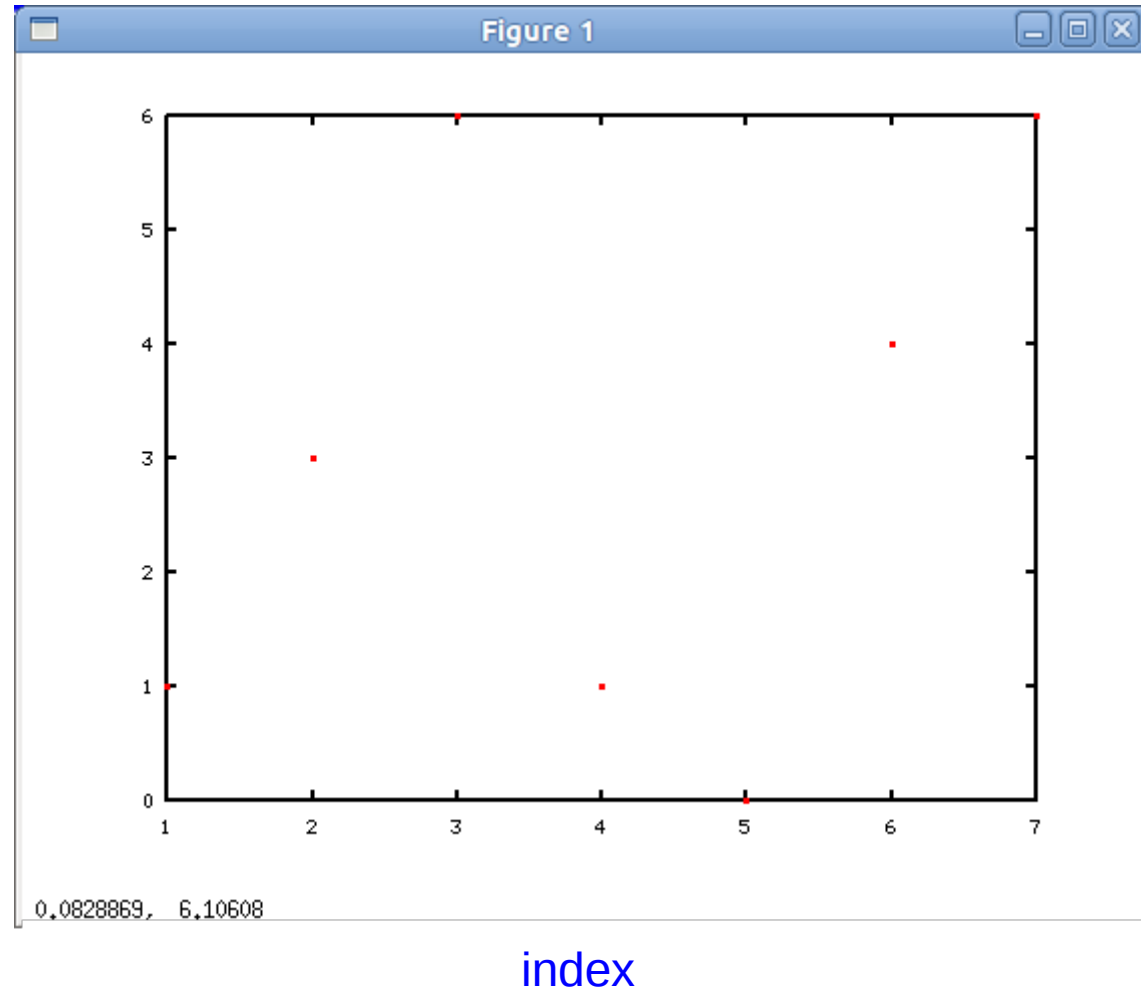
```
v = [1, 3, 6, 1, 0, 4, 6];
plot(v);
```

v(index)



index

# Vector

## Add some color

### Octave

```
v = [1, 3, 6, 1, 0, 4, 6];
plot(v,'ro');
```

red    markers: 'o'



v(index)
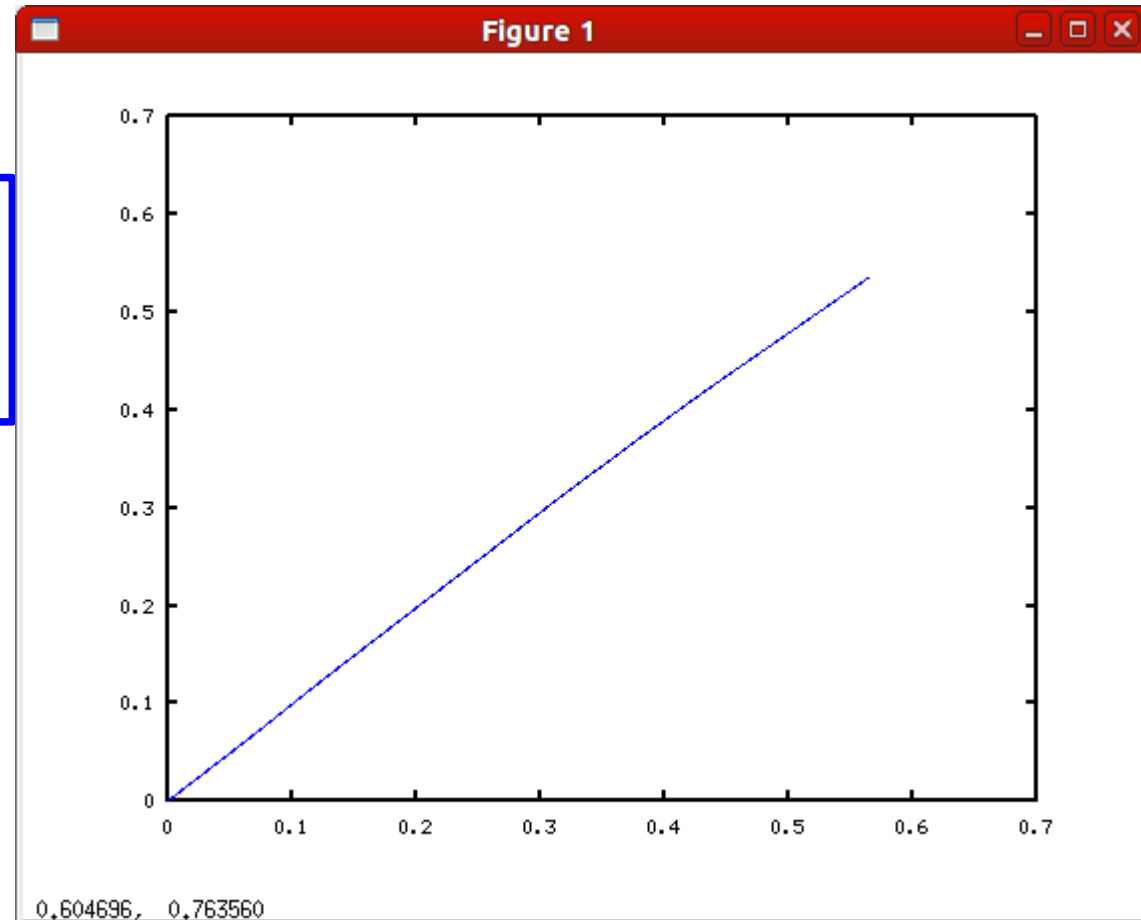
index

# Plotting part only

Two vectors: $x(t)$ vs. $y(t)$

## Octave

```
t = 0:2*pi/100:2*pi;
indx = 1:10
s = sin(t);
plot(t(indx),s(indx));
```

s(index)

indx is a vector with indexes, in this case
indx = [1,2,3,4,5,6,7,8,9,10]



Figure 1

0.604696,  0.763560

t(index)

# Parameter curves
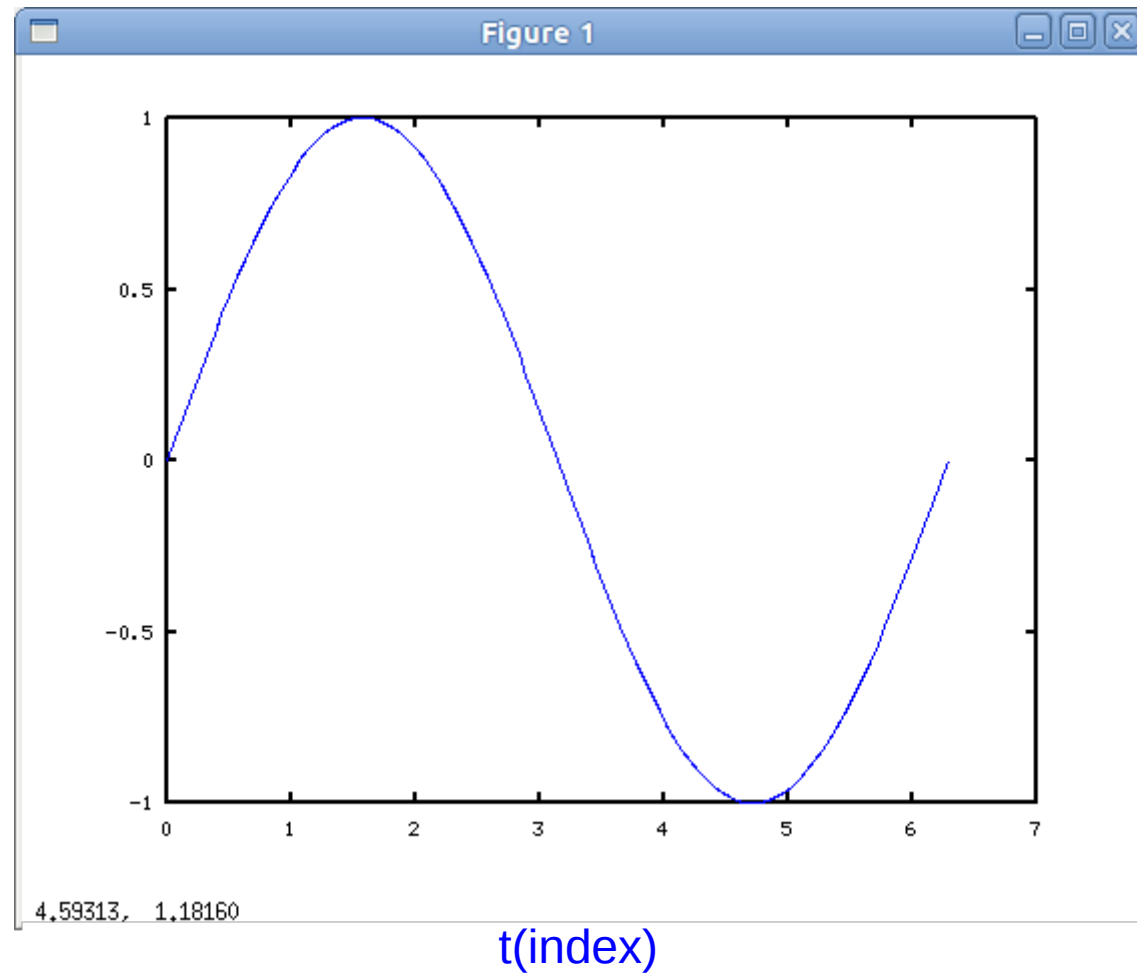
Two vectors: *x*(*t*) vs. *y*(*t*)

## Octave

```
t = 0:2*pi/100:2*pi;
s = sin(t);
plot(t,s);
```
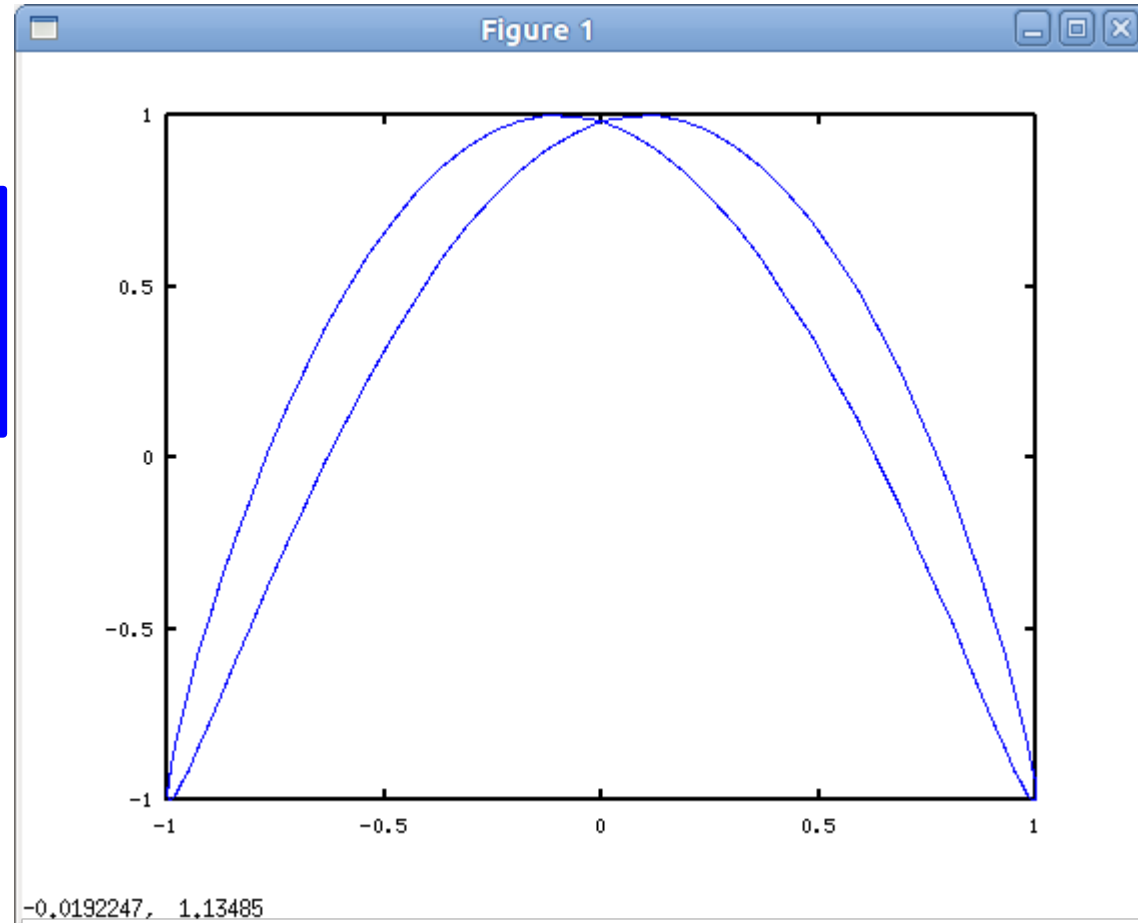
s(index)

t and s must be of same length!



t(index)

# Parameter curves

Parameter curves: $x(t)$ vs. $y(t)$. Lissajous.

## Octave

```
t = 0:2*pi/100:2*pi;
s = sin(t);
c = cos(2*(t+0.1));
plot(s, c);
```

c(index)



s(index)
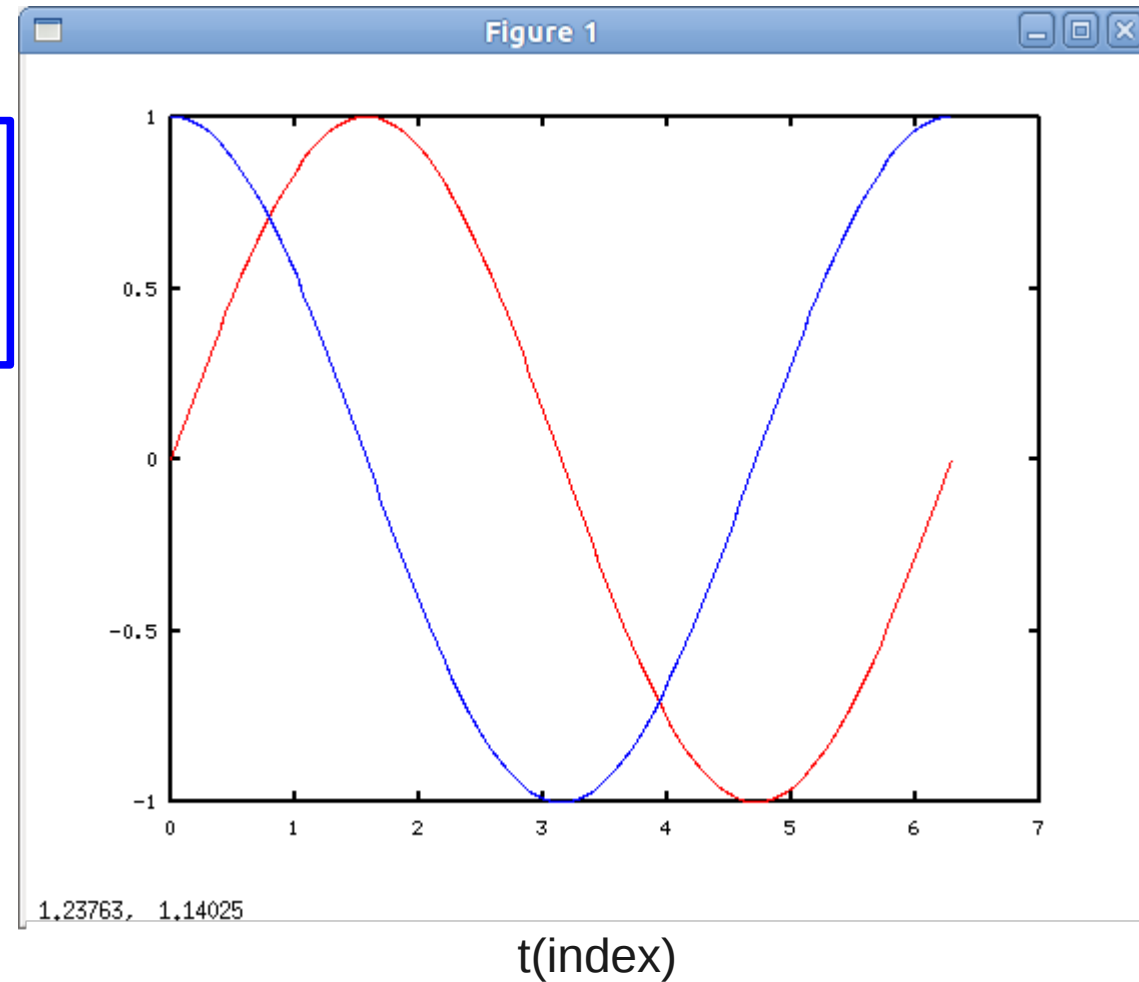
# Parameter plot

## Double plots

### Octave

```
t = 0:2*pi/100:2*pi;
s = sin(t);
c = cos(t);
plot(t,s,'r-',t,c,'b-');
```
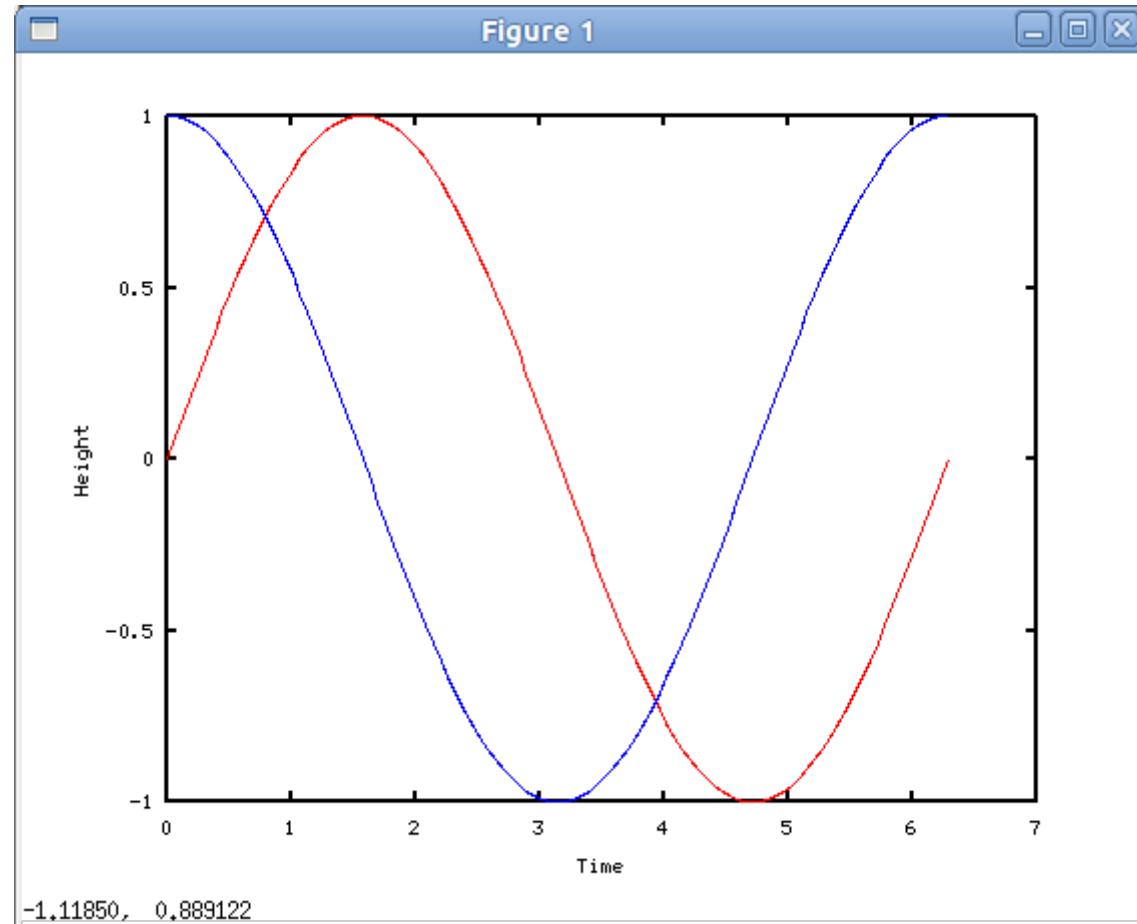


s(index)
c(index)

t(index)

# Parameter plot

## Label it

### Octave

```
t = 0:2*pi/100:2*pi;
s = sin(t);
c = cos(t);
plot(t,s,'r-',t,c,'b-');
xlabel('Time');
ylabel('Height');
```
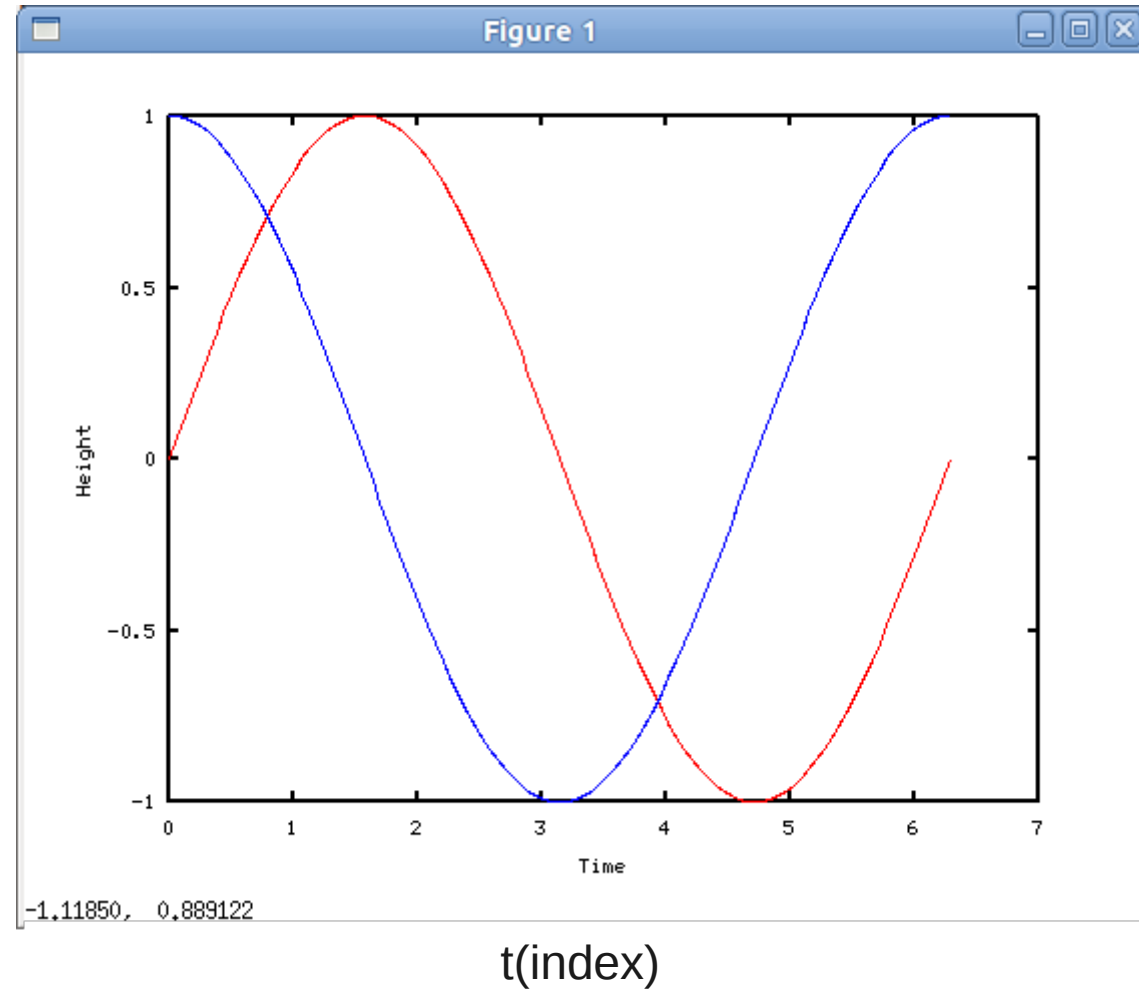
s(index)
c(index)



t(index)

# Parameter plot

## Double plot

### Octave

```
hold off;
t = 0:2*pi/100:2*pi;
s = sin(t);
plot(t,s,'r-');
hold on;
c = cos(t);
plot(t,c,'b-');
```
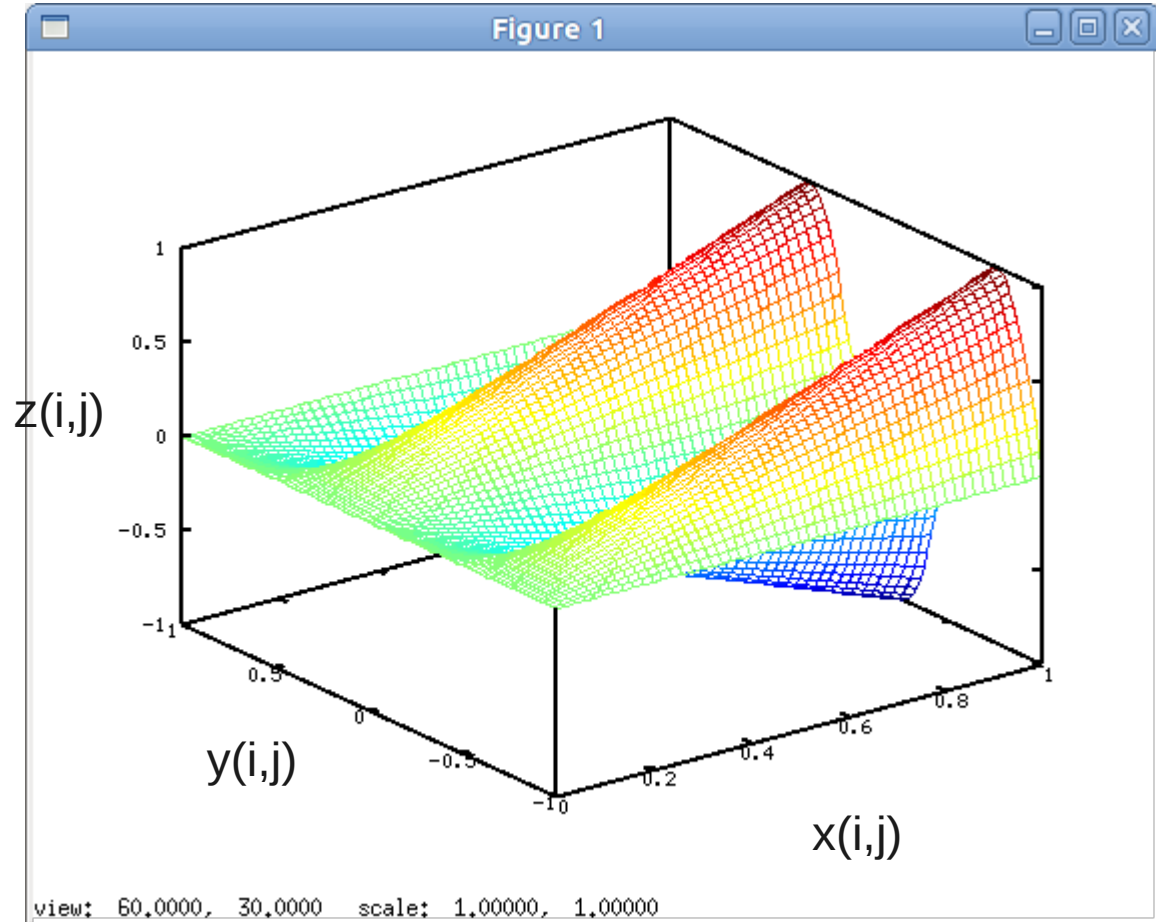
s(index)
c(index)



t(index)

# 3D plots

$z = f(x, y)$

## Octave

```
[x, y] = meshgrid(0:0.02:1,
    -1:0.02:1);
z = x.*sin(2*pi*y);
mesh(x,y,z);
```

# 3D plots

$z = f(x, y)$

## Octave

```
[x, y] = meshgrid(0:0.02:1,
    -1:0.02:1);
z = x.*sin(2*pi*y);
mesh(x,y,z);
contour(x,y,z);
contourf(x,y,z);
```