

**Let's say that you want to plot these two equations in the same window:**

$$y_1 = \cos(x)$$

$$y_2 = x^2 - 1$$

## Steps for 2D Plots

1. Define your interval of interest, think of highest and lowest values, and a step.
2. Define your function  $y = f(x)$ . Take into account that you're working with arrays, not with scalars, use dot operators.
3. Use appropriate 2D built-in functions

### 1. Define your Interval

Think:

- What values for x do I want to take into account?
- What steps in the array should I consider?

### 2. Define your Function(s)

Think of lower and upper values, and steps

```
x = -1 : 0.1 : 1.5;  
y1 = cos(x);  
y2 = x.^2 - 1;
```

Now, x, y1 and y2 are vectors with appropriate values.

### 3. Use 2D built-in Functions

You can use functions such as:

plot

stem

polar, compass, rose

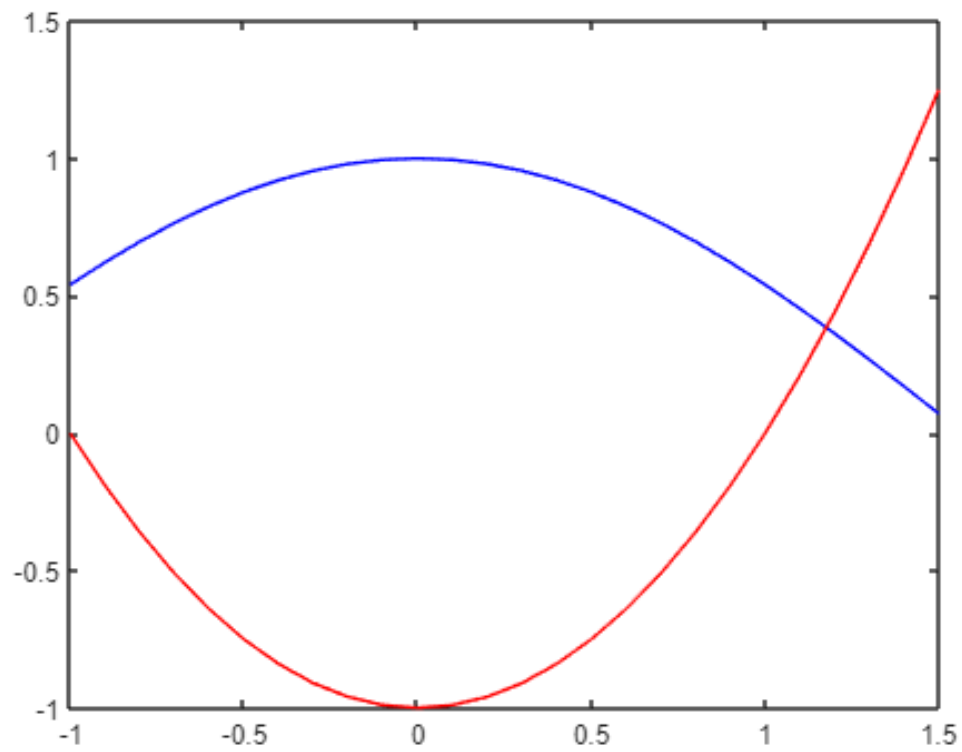
loglog, semilogx, semilogy

area, fill

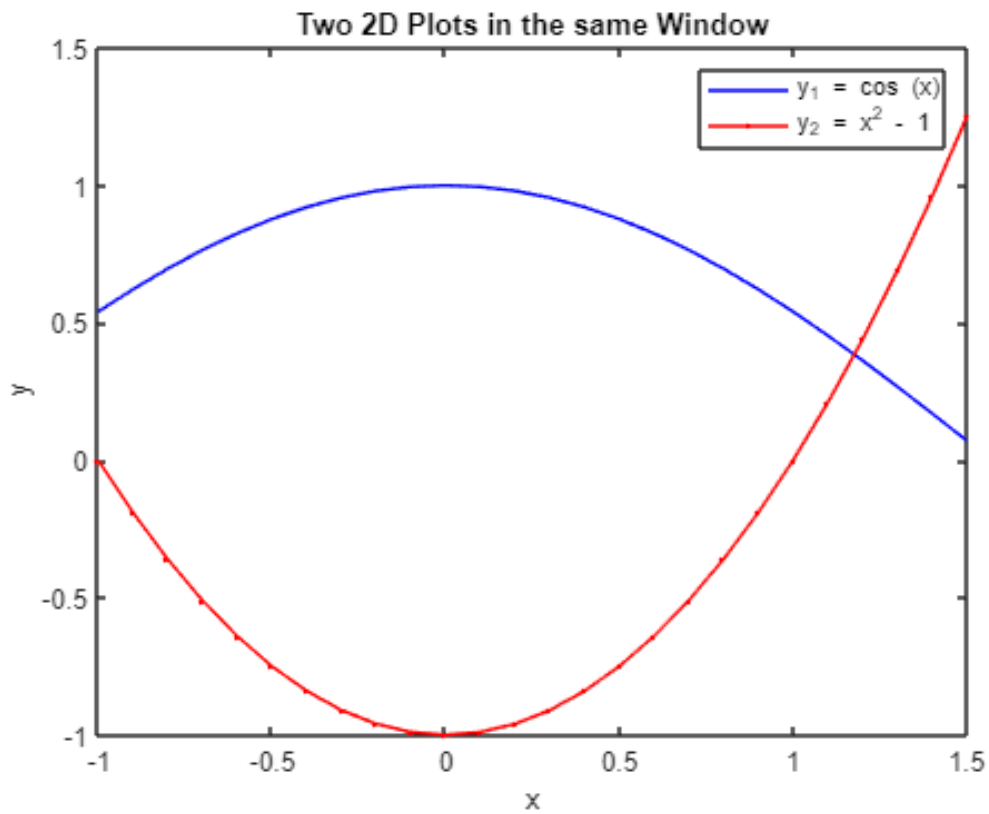
pie

hist, stairs

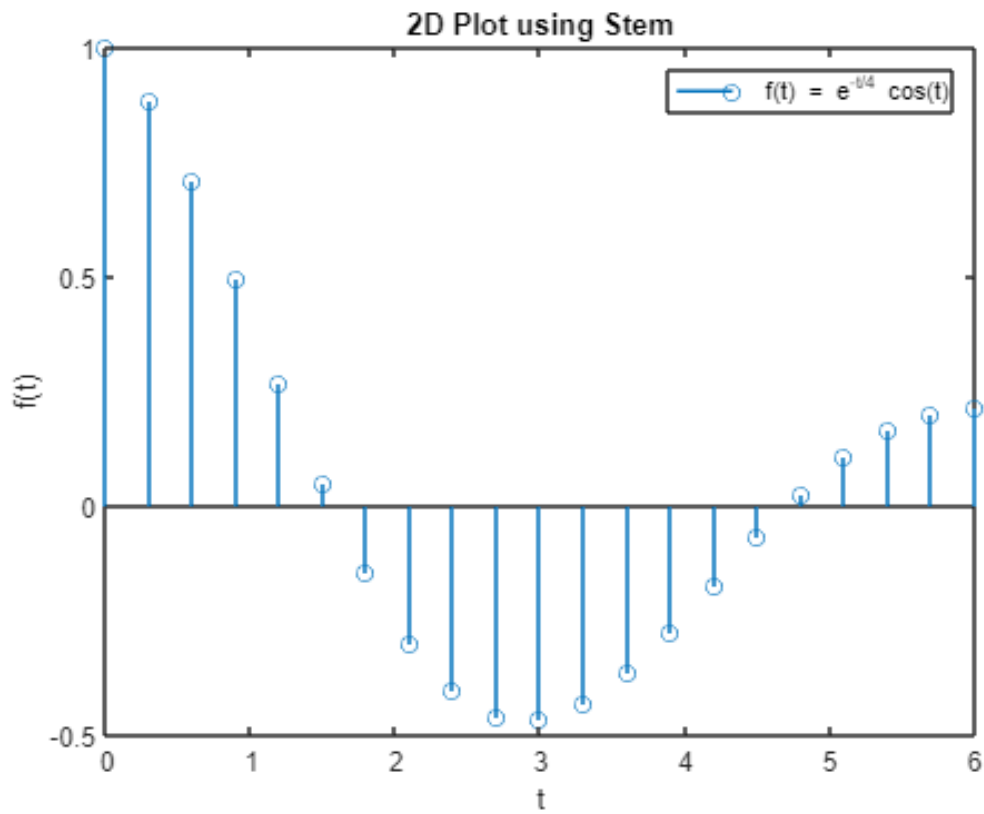
```
plot(x,y1,'b',x,y2,'r')
```



```
plot(x, y1, 'b' , x, y2, 'r.-' )  
title('Two 2D Plots in the same Window' )  
legend('y_1 = cos (x)', 'y_2 = x^2 - 1')  
xlabel('x')  
ylabel('y')
```



```
t = 0 : .3 : 2*pi;  
f = exp(-t/4) .* cos(t);  
stem(t,f)  
title('2D Plot using Stem' )  
legend( 'f(t) = e^{-t/4} cos(t) ' )  
xlabel('t' )  
ylabel('f(t)')
```



```
rows = randi(1,5)
```

```
rows = 5x5
```

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

```
col = randi(1,5)
```

```
col = 5x5
```

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

```
x = length(rows)
```

```
x = 5
```

```
y = length(col)
```

```
y = 5
```

```
mat = zeros(x,y)
```

```
mat = 5x5
```

```
0    0    0    0    0
```

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0