This is all about plotting in MATLAB

```
% defining a range in MATLAB
x = 1 : 10
```

```
x = 1×10
     1     2     3     4     5     6     7     8     9    10
```

```
% defining a range with a step size
y = 1 : 0.5 : 5
```

```
y = 1×9
    1.0000    1.5000    2.0000    2.5000    3.0000    3.5000    4.0000    4.5000 ···
```

```
% calculate the length of these vectors
len = length(y)
```

```
len = 9
```

```
% negative range
z = -10: -1: -25
```

```
z = 1×16
   -10   -11   -12   -13   -14   -15   -16   -17   -18   -19   -20   -21   -22 ···
```

```
t = [1:10]
```

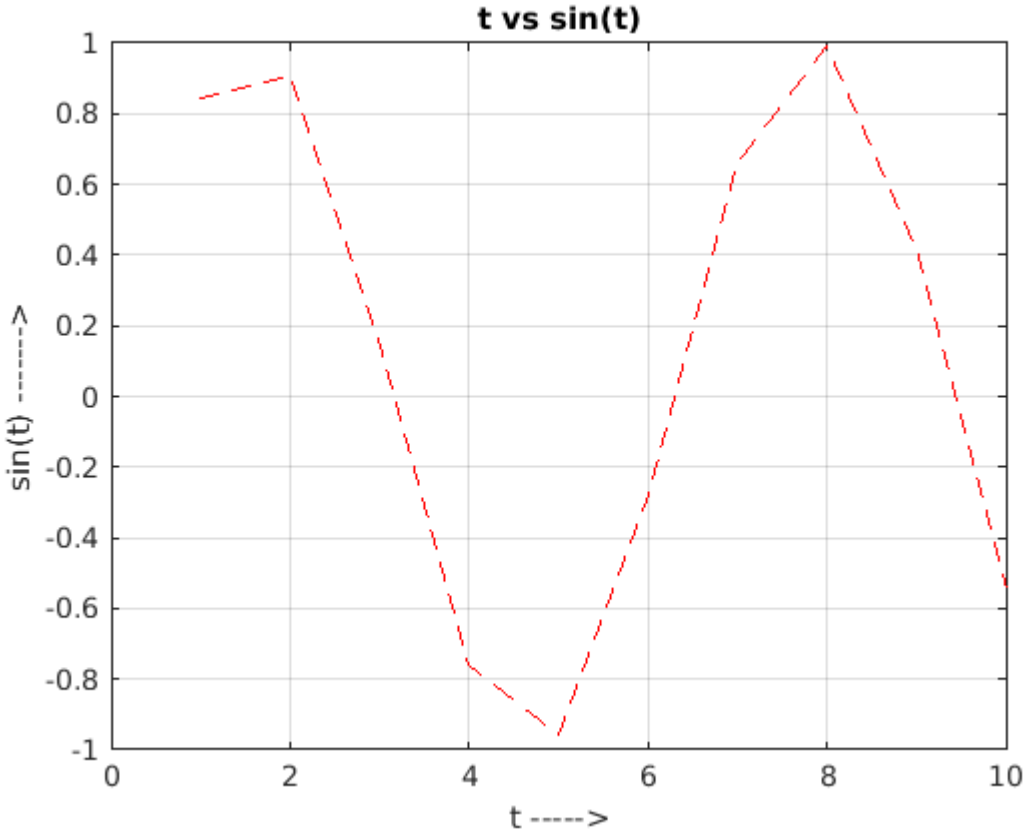
```
t = 1×10
     1     2     3     4     5     6     7     8     9    10
```

```
sin(t)
```

```
ans = 1×10
    0.8415    0.9093    0.1411   -0.7568   -0.9589   -0.2794    0.6570    0.9894 ···
```

```
y = sin(t);
plot(t, y, '--r');

grid on
title('t vs sin(t)')
xlabel('t ----->')
ylabel('sin(t) ------->')
```

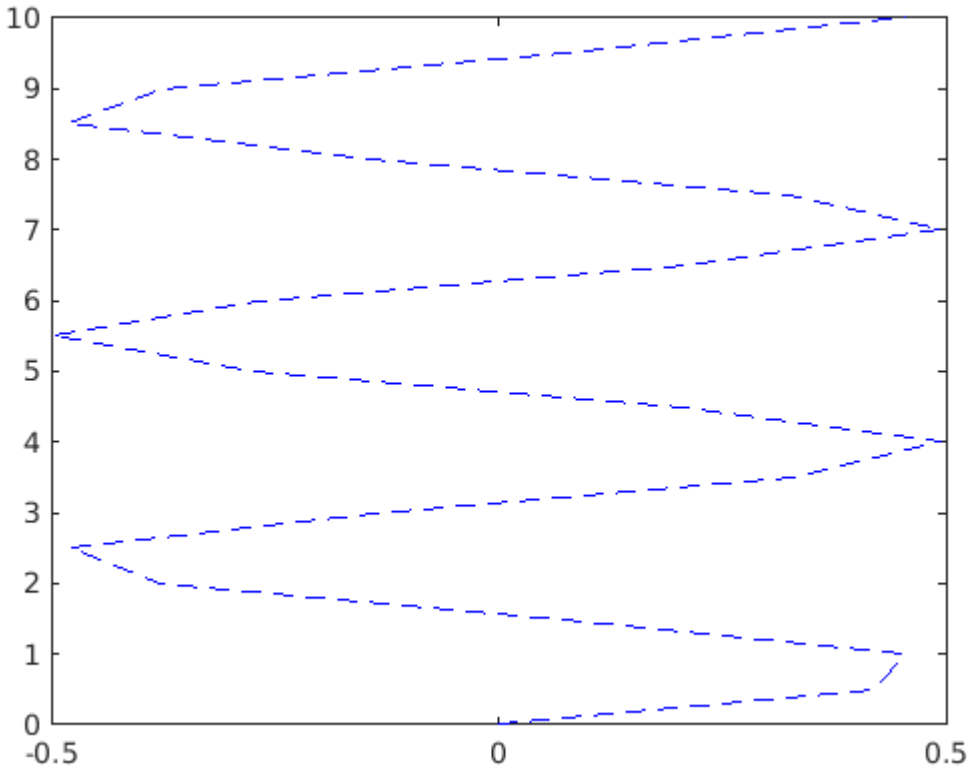



```
% let us define some functions as
t = 0: 0.5: 10
```

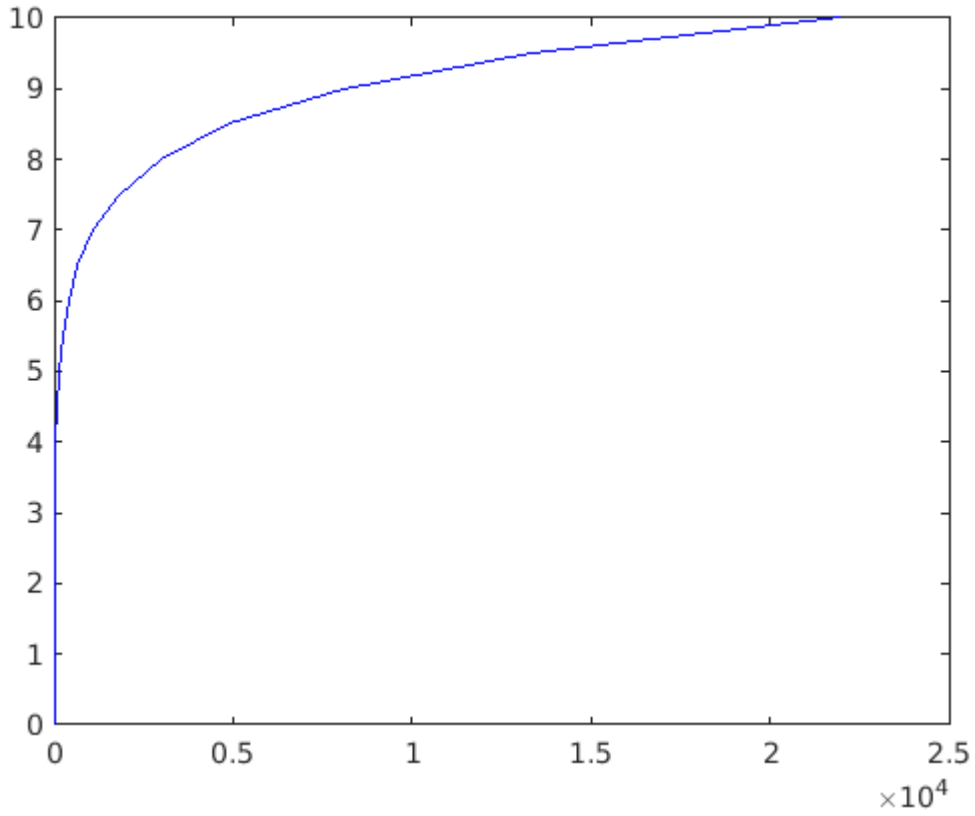
```
t = 1×21
         0    0.5000    1.0000    1.5000    2.0000    2.5000    3.0000    3.5000 ···
```

```
f1 = sin(t);
f2 = cos(t);
f3 = sin(t) .* cos(t);
f4 = exp(t);

plot(f3, t, '--b');
```




```
plot(f4, t, '-b');
```




```
% linspace => gives n points between x and y
linspace(10, 18, 9)
```

```
ans = 1×9
    10    11    12    13    14    15    16    17    18
```

```
x = 0.5;
y = 1.0;
n = 10;
linspace(x, y, n)
```

```
ans = 1×10
    0.5000    0.5556    0.6111    0.6667    0.7222    0.7778    0.8333    0.8889 ···
```

```
%logspace
logspace(1, 8, 8)
```

```
ans = 1×8
          10         100        1000       10000      100000     1000000 ···
```

```
format long;
logspace(-1, -6, 6)
```

```
ans = 1×6
   0.100000000000000   0.010000000000000   0.001000000000000   0.000100000000000 ···
```

```
% in reverse direction
format short;
linspace(10, 5, 5)
```

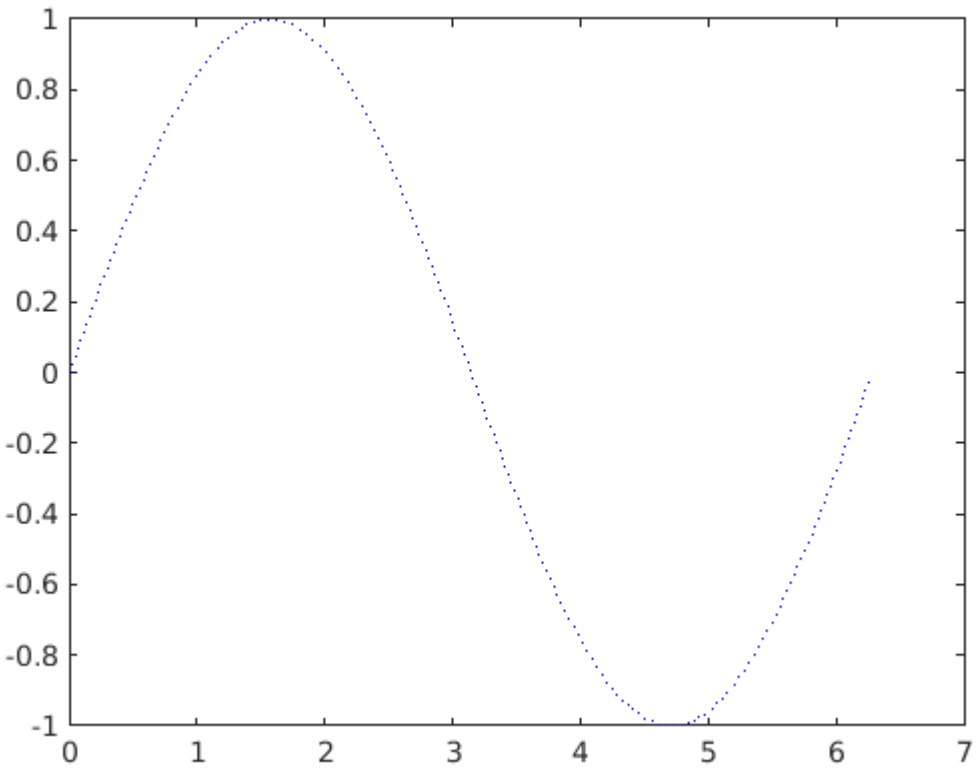
```
ans = 1×5
   10.0000    8.7500    7.5000    6.2500    5.0000
```

```
whos
```

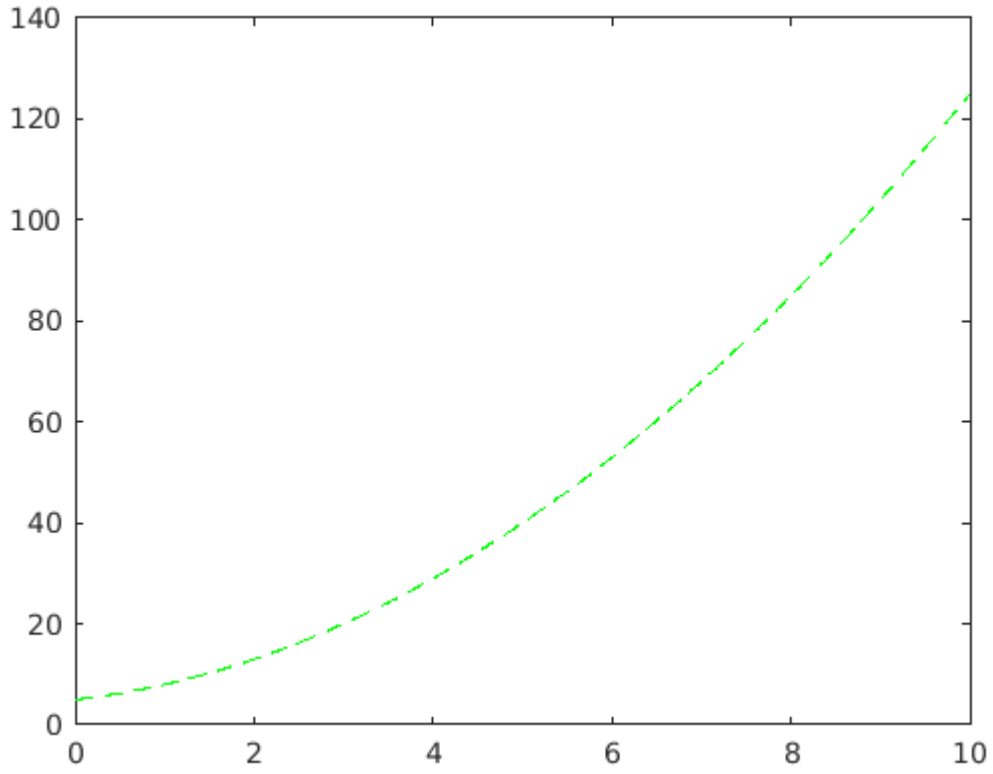
```
  Name      Size              Bytes  Class     Attributes

  ans       1x5                  40  double
  f1        1x21                168  double
  f2        1x21                168  double
  f3        1x21                168  double
  f4        1x21                168  double
  len       1x1                   8  double
  n         1x1                   8  double
  p         1x1001             8008  double
  sine      1x629              5032  double
  t         1x21                168  double
  x         1x1                   8  double
  y         1x1                   8  double
  z         1x16                128  double
```

```
sine = sin([0:0.01:2*pi]);
plot([0:0.01:2*pi], sine, ':b')
```



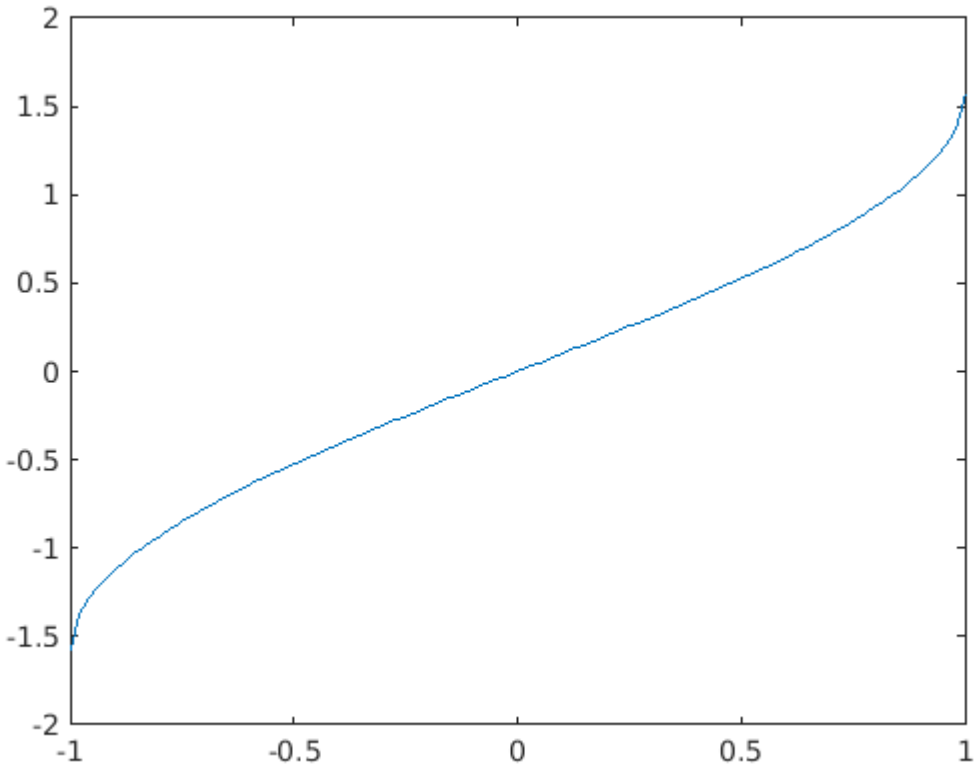

```
t = [0: 0.01: 10];
p = t .^ 2 + 2 * t + 5;
plot(t, p, '--g')
```




```
x = linspace(-1, 1, 100);
y = asin(x)
```

```
y = 1×100
   -1.5708   -1.3694   -1.2856   -1.2209   -1.1660   -1.1175   -1.0733   -1.0325 ···
```

```
plot(x,
```



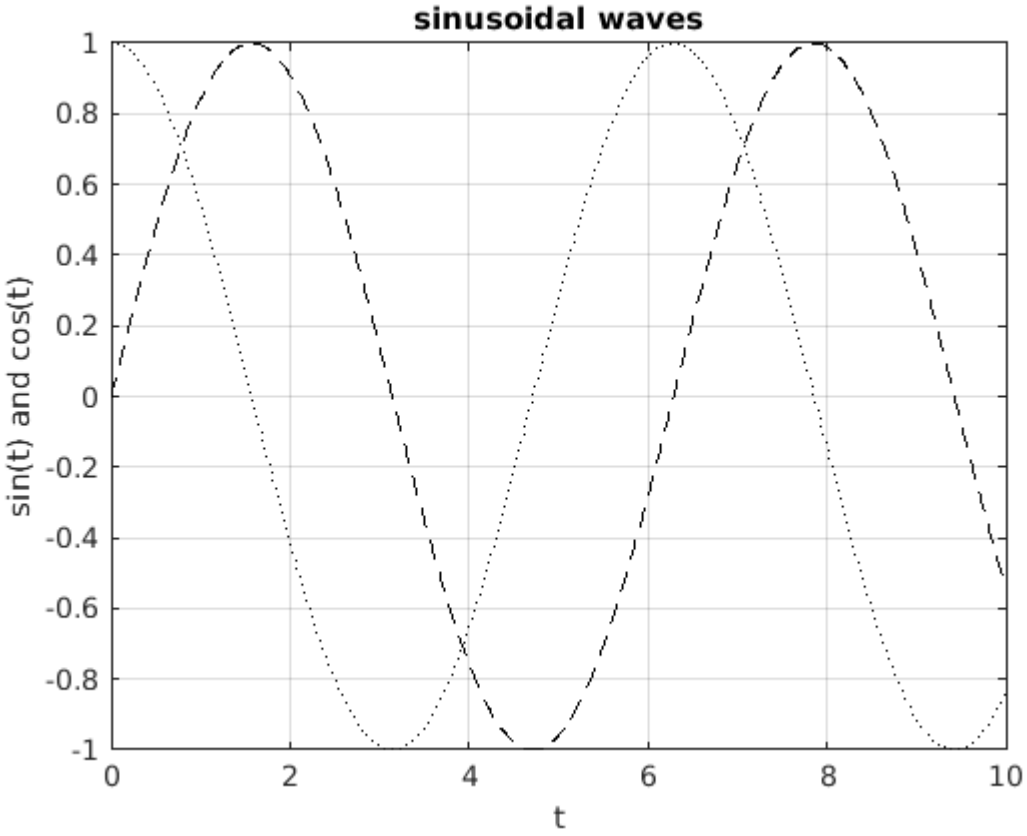
Name	Size	Bytes	Class	Attributes
ans	1x5	40	double	
f1	1x21	168	double	
f2	1x21	168	double	
f3	1x21	168	double	
f4	1x21	168	double	
len	1x1	8	double	
n	1x1	8	double	
p	1x1001	8008	double	
sine	1x629	5032	double	
t	1x1001	8008	double	
x	1x100	800	double	
y	1x100	800	double	
z	1x16	128	double	

```
y = 5 * y .^ 2 + 5
```

```
y = 1×100
10^3 ×
    1.5079    1.0385    0.8846    0.7803    0.7010    0.6371    0.5839    0.5386 · · ·
```

```
% plotting two at once
x = 0:0.01:10;
y = sin(x);
z = cos(x);
```

```
plot(x, y, '--k');
grid on;
hold on;
plot(x, z, ':k');
xlabel("t");
ylabel("sin(t) and cos(t)");
title("sinusoidal waves");
plot(x, y, '--k');
grid on;
hold on;
plot(x, z, ':k');
```




```
%% end of notebook
```