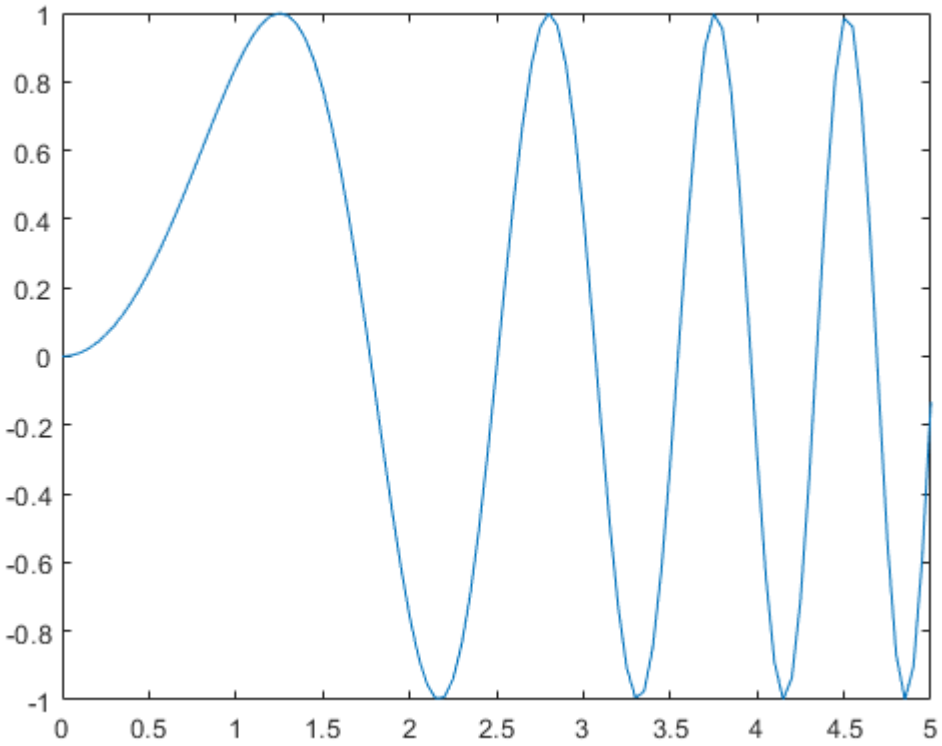
Creating 2-D Plots

This example shows how to create a variety of 2-D plots in MATLAB®.

Line Plots

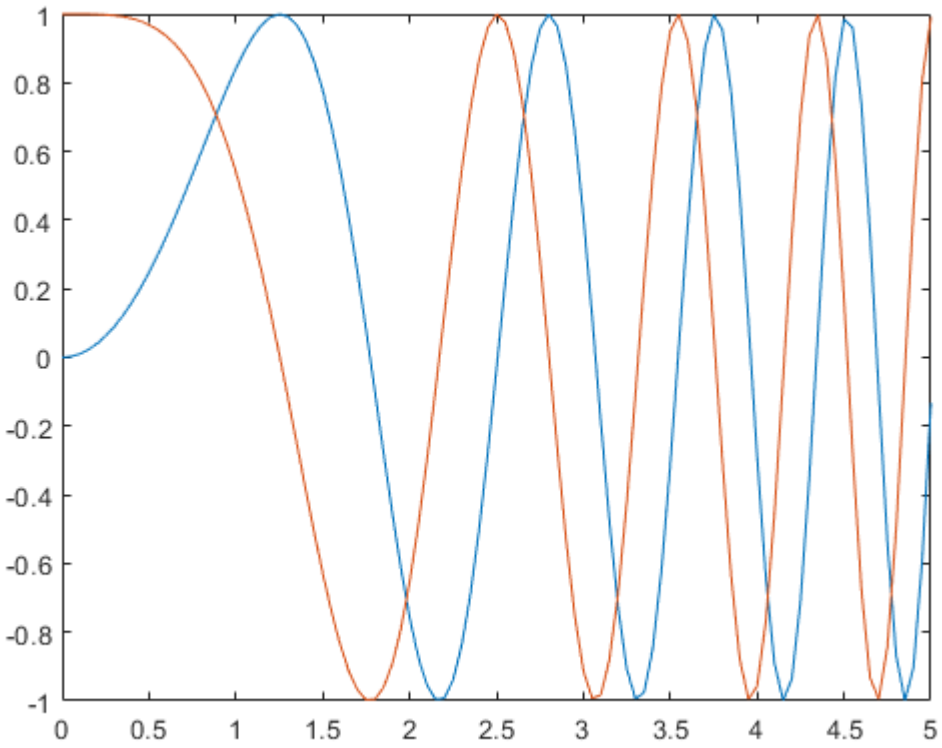
The `plot` function creates simple line plots of *x* and *y* values.

```
x = 0:0.05:5;
y = sin(x.^2);
figure
plot(x,y)
```



Line plots can display multiple sets of *x* and *y* data.

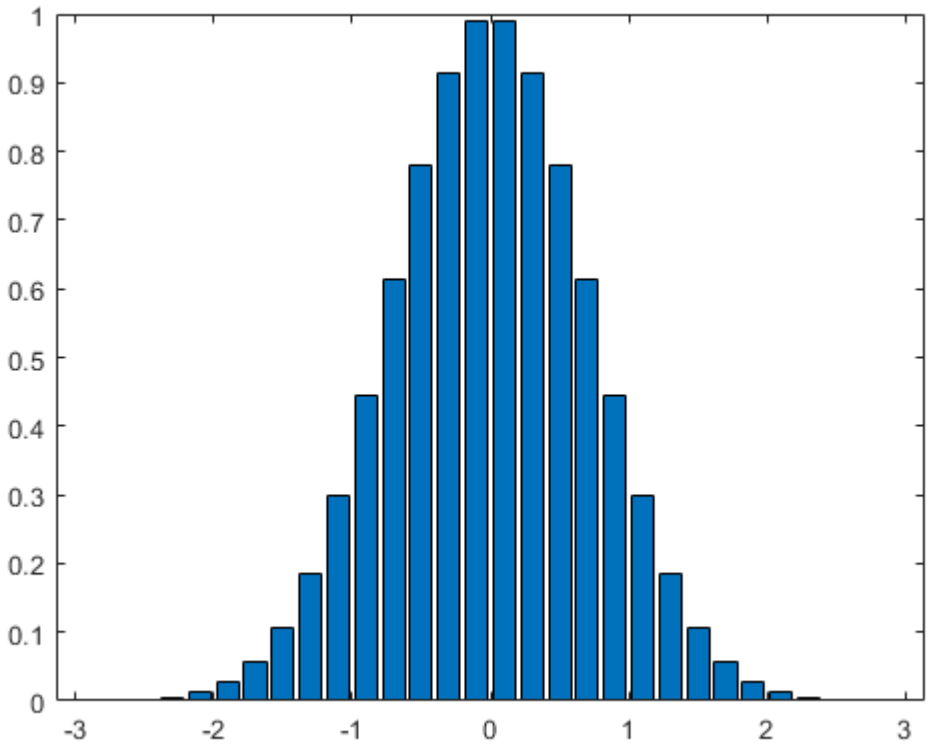
```
y1 = sin(x.^2);
y2 = cos(x.^2);
plot(x,y1,x,y2)
```



Bar Plots

The `bar` function creates vertical bar charts. The `barh` function creates horizontal bar charts.

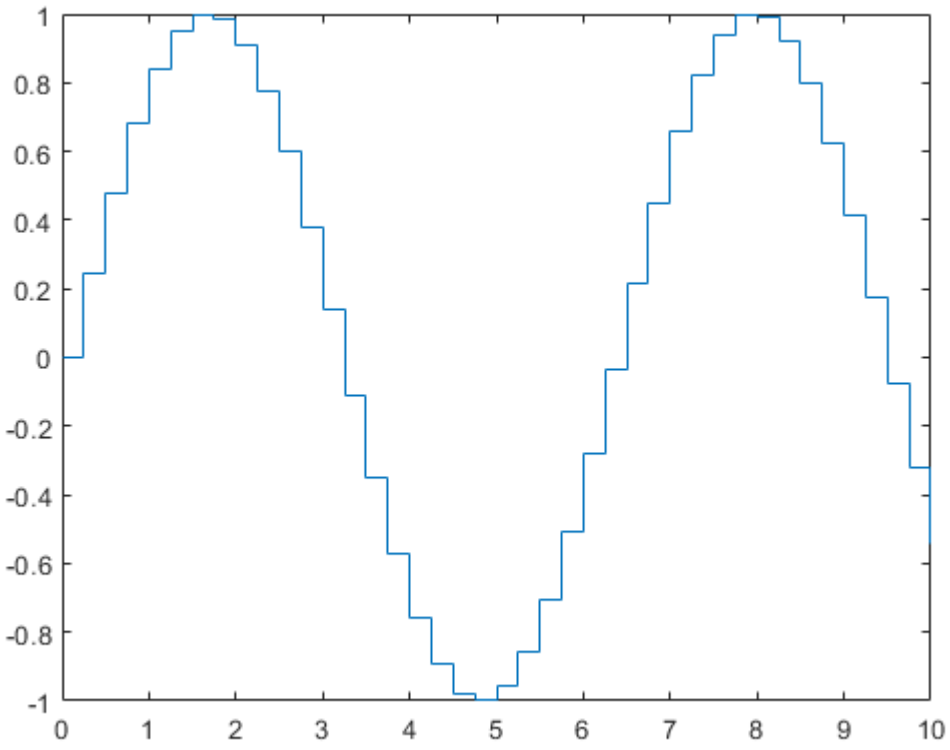
```
x = -2.9:0.2:2.9;
y = exp(-x.*x);
bar(x,y)
```



Stairstep Plots

The `stairs` function creates a stairstep plot. It can create a stairstep plot of Y values only or a stairstep plot of *x* and *y* values.

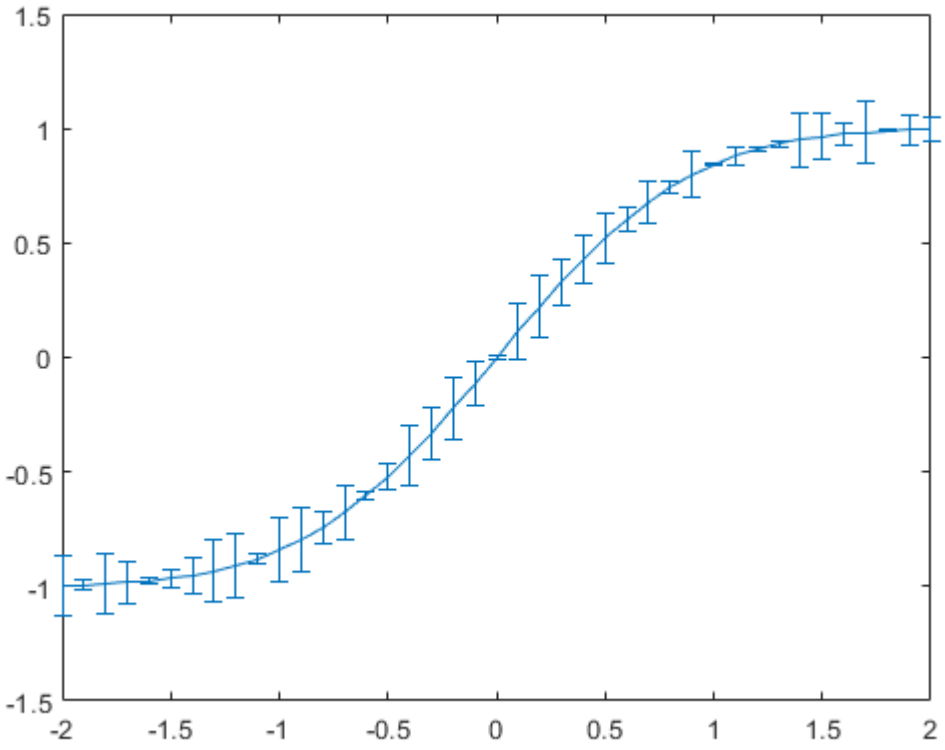
```
x = 0:0.25:10;
y = sin(x);
stairs(x,y)
```



Errorbar Plots

The `errorbar` function draws a line plot of *x* and *y* values and superimposes a vertical error bar on each observation. To specify the size of the error bar, pass an additional input argument to the `errorbar` function.

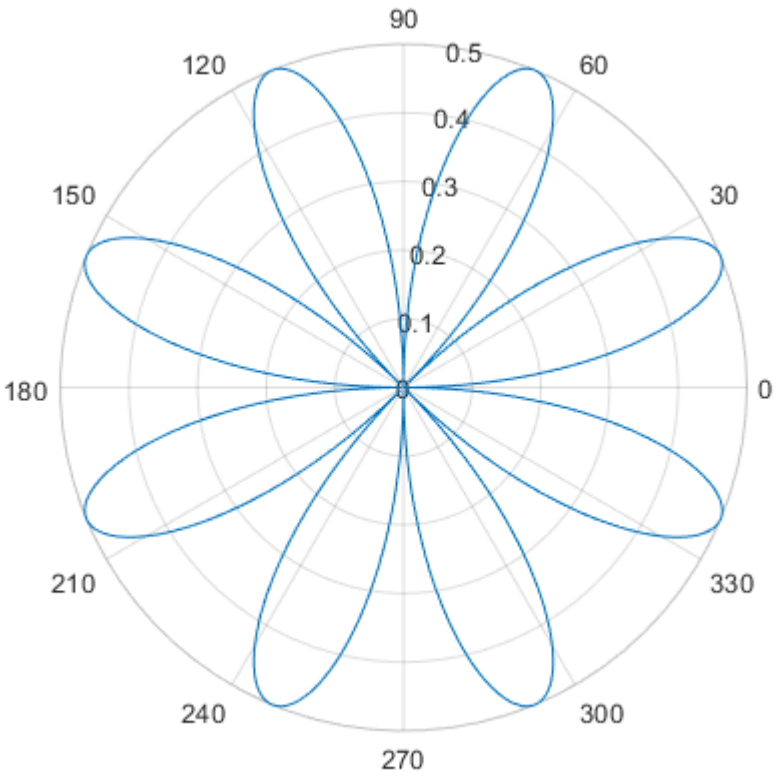
```
x = -2:0.1:2;
y = erf(x);
eb = rand(size(x))/7;
errorbar(x,y,eb)
```



Polar Plots

The `polarplot` function draws a polar plot of the angle values in `theta` (in radians) versus the radius values in `rho`.

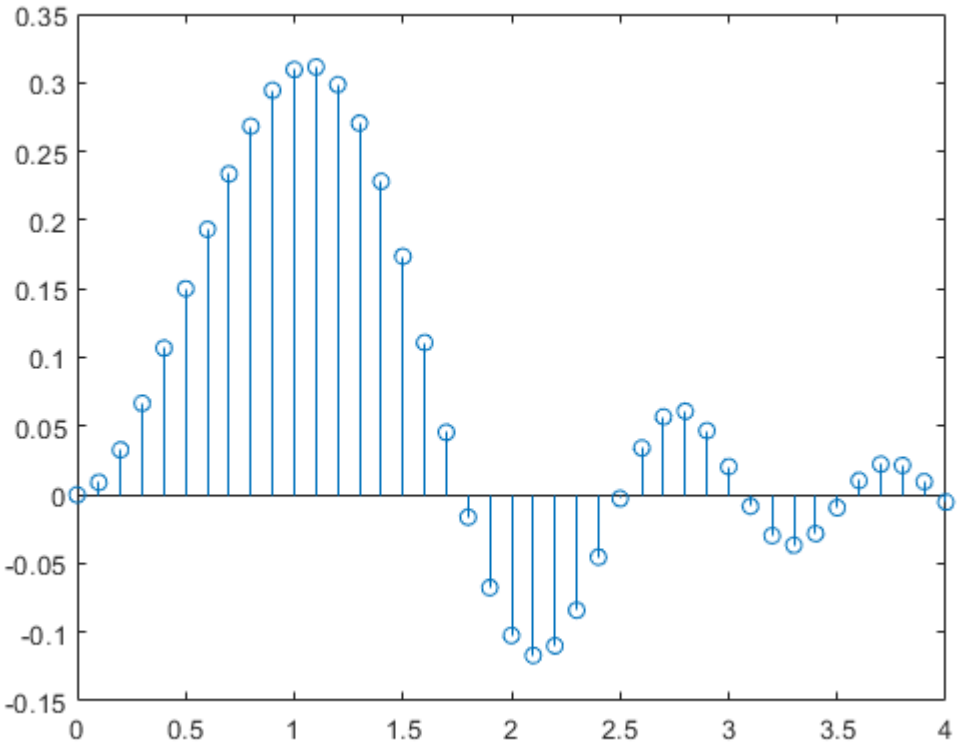
```
theta = 0:0.01:2*pi;                        % angle
rho = abs(sin(2*theta).*cos(2*theta));      % radius
polarplot(theta,rho)
```



Stem Plots

The `stem` function draws a marker for each *x* and *y* value with a vertical line connected to a common baseline.

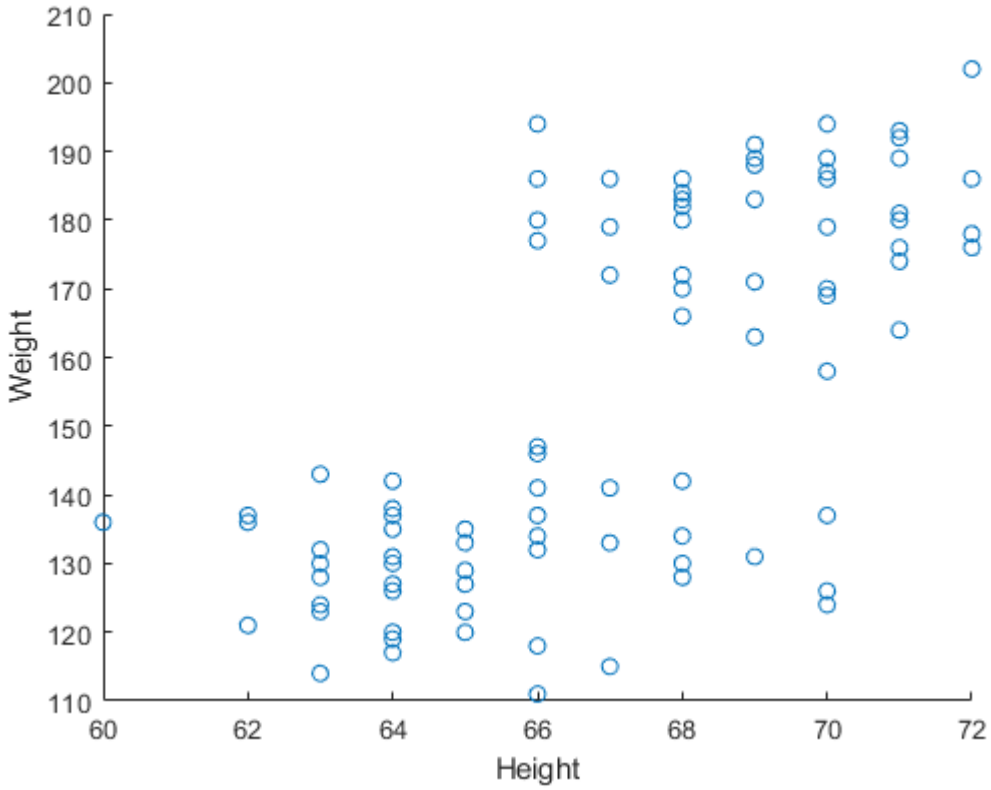
```
x = 0:0.1:4;
y = sin(x.^2).*exp(-x);
stem(x,y)
```



Scatter Plots

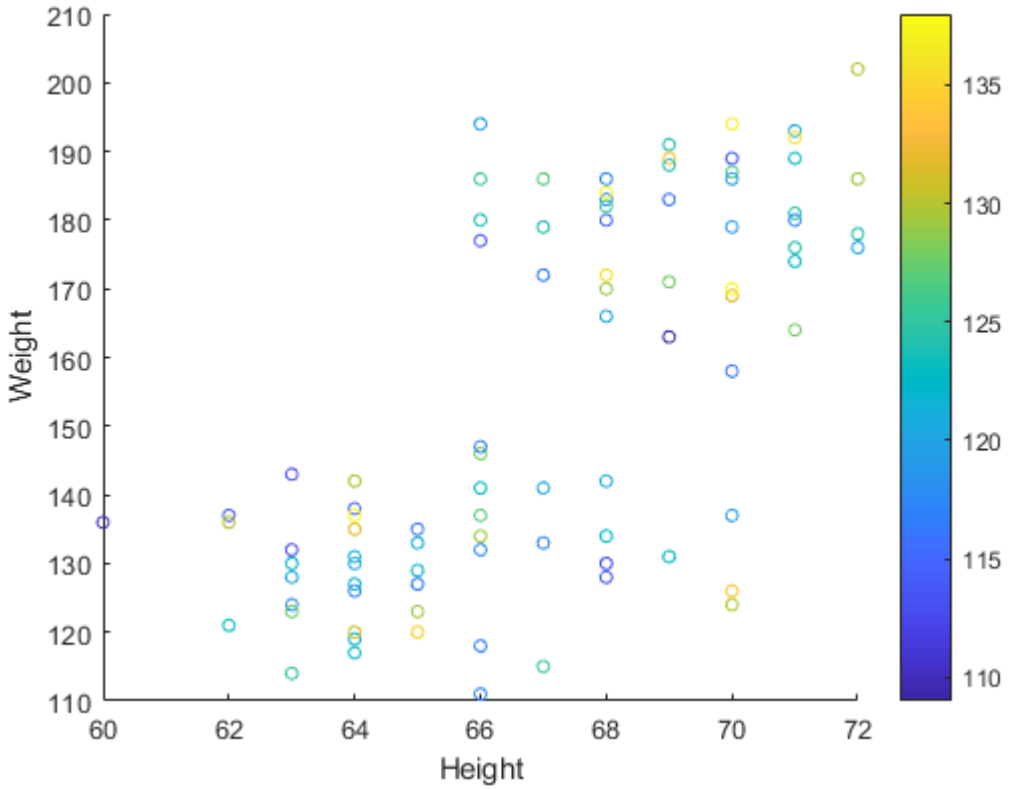
The `scatter` function draws a scatter plot of *x* and *y* values.

```
load patients Height Weight Systolic    % load data
scatter(Height,Weight)                  % scatter plot of Weight vs. Height
xlabel('Height')
ylabel('Weight')
```



Use optional arguments to the `scatter` function to specify the marker size and color. Use the `colorbar` function to show the color scale on the current axes.

```
scatter(Height,Weight,20,Systolic)    % color is systolic blood pressure
xlabel('Height')
ylabel('Weight')
colorbar
```


Weight
Height
210
200
190
180
170
160
150
140
130
120
110
60
62
64
66
68
70
72
135
130
125
120
115
110