■ MATLAB Plot Commands – Full Guide (All 23 Types)

plot() — Line Plot

```
x = 0:0.1:2*pi;
y = sin(x);
plot(x, y, 'b--', 'LineWidth', 2);
xlabel('x'); ylabel('sin(x)');
title('Sine Wave');
grid on;
```

scatter() — Scatter Plot

```
x = rand(1, 20);
y = rand(1, 20);
scatter(x, y, 80, 'filled');
xlabel('X'); ylabel('Y');
title('Scatter Plot Example');
```

stem() — Stem Plot

```
x = 0:0.5:5;
y = x.^2;
stem(x, y, 'r', 'LineWidth', 2);
title('Stem Plot');
```

bar() — Bar Chart

```
x = [1 2 3 4];
y = [5 8 3 6];
bar(x, y);
xlabel('Category'); ylabel('Value');
title('Bar Chart Example');
```

barh() — Horizontal Bar Chart

```
y = [3 6 4 8];
barh(y);
title('Horizontal Bar Chart');
```

pie() — Pie Chart

```
data = [10 20 30 40];
pie(data);
title('Pie Chart Example');
```

histogram() — Histogram

```
data = randn(1, 1000);
histogram(data, 20);
xlabel('Value'); ylabel('Frequency');
title('Histogram Example');
```

area() — Area Plot

```
x = 0:0.1:4*pi;
y = sin(x) + 1;
area(x, y);
title('Area Plot');
```

errorbar() — Error Bar Plot

```
x = 1:5;
y = [2 3 4 3 5];
err = [0.2 0.4 0.3 0.5 0.2];
errorbar(x, y, err, 'o-', 'LineWidth', 1.5);
```

```
title('Error Bar Plot');
```

polarplot() — Polar Plot
```
theta = 0:0.1:2*pi;
r = 2*sin(3*theta);
polarplot(theta, r, 'r', 'LineWidth', 2);
title('Polar Plot');
```

contour() — 2D Contour Plot
```
[X, Y] = meshgrid(-3:0.1:3);
Z = X.^2 + Y.^2;
contour(X, Y, Z, 20);
colorbar;
title('Contour Plot');
```

plot3() — 3D Line Plot
```
t = 0:0.1:10;
x = sin(t);
y = cos(t);
z = t;
plot3(x, y, z, 'LineWidth', 2);
grid on;
title('3D Line Plot');
xlabel('X'); ylabel('Y'); zlabel('Z');
```

mesh() — 3D Mesh Surface
```
[X, Y] = meshgrid(-3:0.1:3);
Z = sin(sqrt(X.^2 + Y.^2));
mesh(X, Y, Z);
title('3D Mesh Plot');
```

surf() — 3D Surface Plot
```
[X, Y] = meshgrid(-3:0.1:3);
Z = sin(sqrt(X.^2 + Y.^2));
surf(X, Y, Z);
shading interp;
colorbar;
title('3D Surface Plot');
```

surfc() — Surface + Contour
```
[X, Y] = meshgrid(-3:0.1:3);
Z = sin(X).*cos(Y);
surfc(X, Y, Z);
title('Surface + Contour Plot');
```

contour3() — 3D Contour Lines
```
[X, Y] = meshgrid(-3:0.1:3);
Z = X.^2 + Y.^2;
contour3(X, Y, Z, 20);
title('3D Contour Plot');
```

waterfall() — Waterfall Plot
```
[X, Y] = meshgrid(1:0.5:10, 1:20);
Z = sin(X) + cos(Y);
waterfall(X, Y, Z);
title('Waterfall Plot');
```

bar3() — 3D Bar Chart
```
Z = magic(5);
bar3(Z);
title('3D Bar Chart');
```

scatter3() — 3D Scatter Plot

```
x = rand(1, 30);
y = rand(1, 30);
z = rand(1, 30);
scatter3(x, y, z, 60, z, 'filled');
xlabel('X'); ylabel('Y'); zlabel('Z');
title('3D Scatter Plot');
```

quiver() — 2D Vector Field

```
[x, y] = meshgrid(-2:0.5:2);
u = -y; v = x;
quiver(x, y, u, v);
axis equal;
title('2D Vector Field');
```

quiver3() — 3D Vector Field

```
[x, y, z] = meshgrid(-2:1:2);
u = y; v = -x; w = zeros(size(z));
quiver3(x, y, z, u, v, w);
title('3D Vector Field');
```

sphere() — Sphere Plot

```
[X, Y, Z] = sphere(30);
surf(X, Y, Z);
axis equal;
title('Sphere');
```

cylinder() — Cylinder Plot

```
[X, Y, Z] = cylinder(1, 30);
surf(X, Y, Z);
title('Cylinder');
```

ellipsoid() — Ellipsoid Plot

```
[X, Y, Z] = ellipsoid(0, 0, 0, 2, 1, 1.5, 30);
surf(X, Y, Z);
axis equal;
title('Ellipsoid');
```