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## Multiple Line plots

Examples of:

subplots

Drawing multiples lines;

LineStyle changes (colors, dashed lines, etc.)

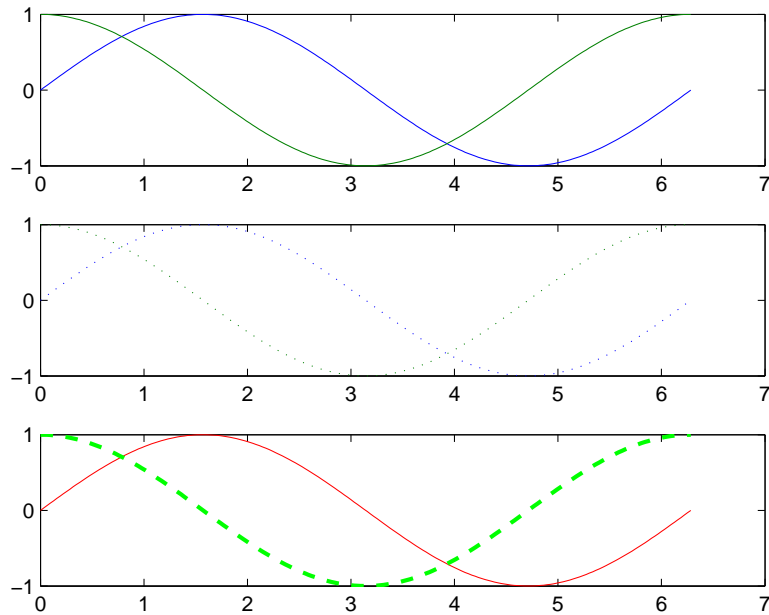
Note that linspace returns a row vector. To draw multiple lines at once, the arrays must be [Npoints, Nlines], so each line must be a column vector, hence the transpose of the linspace return.

```
x = linspace(0, 2*pi, 200)';
y1 = sin(x);
y2 = cos(x);

subplot(3,1,1);
plot(x,y1,x,y2);

subplot(3,1,2);
plot(x, [y1, y2], ':'');

subplot(3,1,3);
plot(x, y1, 'r');
hold on; plot(x, y2, '--g', 'LineWidth', 2); hold off;
```



## Multiple Line plots, with Annotations.

Examples of:

Legend, axis labels, titles

Font Size changes

Cell array containing the plot labels.

```
x = linspace(0, 2*pi, 200)';
y1 = cos(x);
y2 = cos(2*x);
yr = randn(200,1);

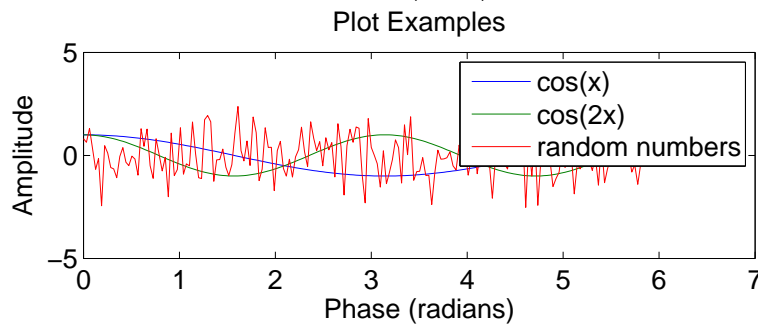
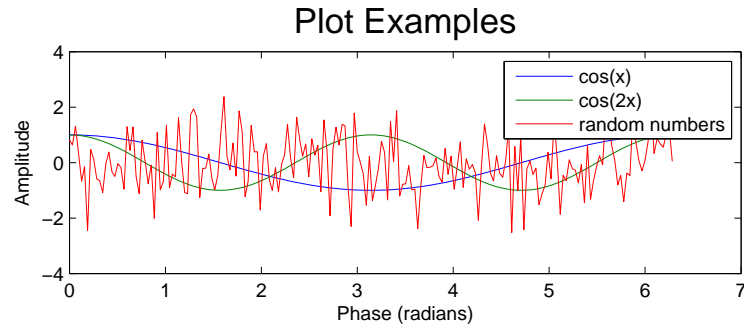
subplot(2,1,1)
plot(x, [y1, y2, yr]);
data_names = [{'cos(x)'} , {'cos(2x)'} , {'random numbers'}];
legend(data_names)
title('Plot Examples', 'FontSize', 18);
xlabel('Phase (radians)');
ylabel('Amplitude');

subplot(2,1,2)
plot(x, [y1, y2, yr]);
```

```

set(gca(), 'FontSize', 14)
legend(data_names)
title('Plot Examples');
xlabel('Phase (radians)')
ylabel('Amplitude');

```



## Log Line plots, with TeX-like symbols

examples of:

log scaling

math symbols, subscript/superscript

text annotations

```

x = linspace(1, 100, 100)';
y1 = 2*x.^-3.6;

```

```

subplot(311);
plot(x, y1);
set(gca(), 'FontSize', 14);
title('plot (linear x axis, linear y axis)')
legend('y = \alpha_0 x^{\alpha_1}')

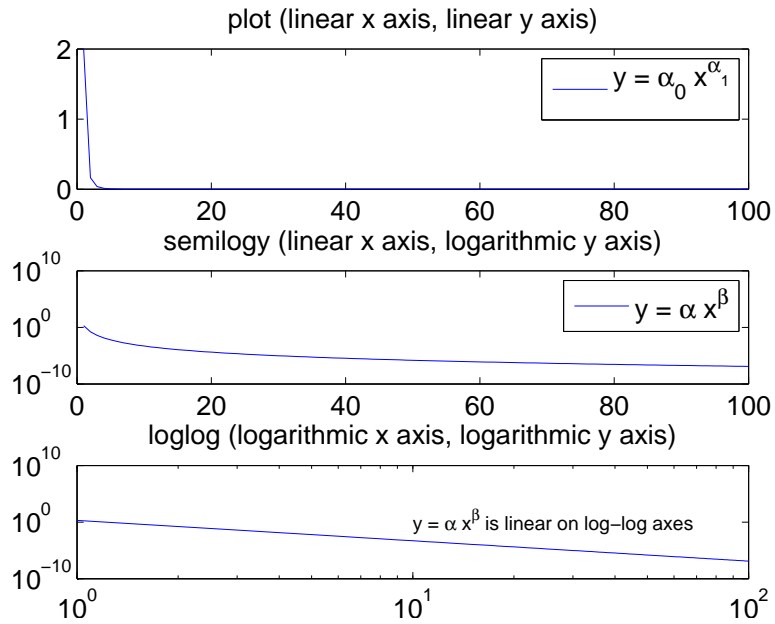
```

```

subplot(312);
semilogy(x, y1);
set(gca(), 'FontSize', 14);
title('semilogy (linear x axis, logarithmic y axis)')
legend('y = \alpha x^{\beta}')

subplot(313);
loglog(x, y1);
set(gca(), 'FontSize', 14);
title('loglog (logarithmic x axis, logarithmic y axis)')
text(10, 1.5, 'y = \alpha x^{\beta} is linear on log-log axes')

```



## Bar plots, error bars

examples of:

bar plots for a histogram;

error bars overplotted

```

x = randn(100,1);
bins = linspace(-5,5,21)';

```

```

xhist = hist(x,bins);

```

```

subplot(2,2,1);
bar(bins, xhist);
title('Histogram of Normal random values', 'FontSize', 14);
xlim([-5 5])
subplot(2,2,2);
stairs(bins, xhist);
title('Histogram of Normal random values', 'FontSize', 14);
xlim([-5 5])

```

```

t = linspace(1,4,30)';
yerror = ones(30,1);
yerror(10:20)=4;
ymeasured = t.^2 + yerror.*randn(30,1);
ytheoretical = t.^2;

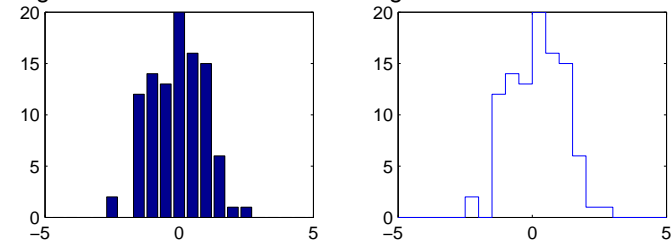
```

```

subplot(2,1,2);
plot(t, ytheoretical);
title('Error Bars', 'FontSize', 14);
hold on;
errorbar(t, ymeasured, yerror, '.');
hold off

```

Histogram of Normal random values Histogram of Normal random values



Error Bars

