Matlab Level 3: Plots

Plotting data is easy using the ‘plot’ function.

```
>>help plot
```

You have a lot of options available to you when plotting. Let’s start with some basics.

```
>>plot(a,b)
```

This is simply plot(x values, y values). Note, the x and y vectors need to be the same dimensions.

Try changing the color

```
>>plot(a,b,’r’)
>>plot(a,b,’ro’)
```

Add a title and axes labels

```
>>title(’my first plot’)
>>ylabel(’y-axis’)
>>xlabel(’x-axis’)
```

Sometimes you want to have more than one line per plot, use the ‘hold on’ function

```
>>d=b*2;
>>hold on
>>plot(a,d,’y’)
>>plot(a(4),d(3),’ro’)
```

When you have finished plotting everything on, be sure you turn off the hold.

```
>>hold off
```

Sometimes you want to create multiple plots on one graph. In that case, use the ‘subplot’ function

```
>>subplot(2,1,1)
>>plot(a,b)
>>subplot(2,1,2)
>>plot(a,d)
```

The subplot function reads, (number of rows of plots, number of columns of plots, plot number to work with). You can use all the same plot functions (e.g., title, ylabel,…) with the subplot function.

**Now, try these problems**

1. Create a straight line (y1) with a slope of 10, y-intercept of 5. Create the line over a time of 0 to 1 seconds at 1/100 of an interval.
2. Plot the above line.
3. Create a parabola (y2=ax²+bx+c), with a=-10; b=5; c=0
4. Plot the parabola
5. Add the straight line and parabola lines together; y3=y1+y2 and plot y3.
6. Using the subplot function, plot y1, y2 and y3 on separate plots.
7. On the y1 plot, add a single point plot(time(20),y1(20),’ro’)
8. On the y2 plot, plot the 50th point as a red circle
9. Create a variable ‘total’ in which column 1 is time, column 2 is y1, column 3 is y2, column 4 is y3.