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# Numerical Analysis

Math 370 Fall 2004  
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MWF 2:30 - 3:25pm  
Fowler North 5

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## Worksheet 6: Friday September 17

**SUMMARY** Introduction to MATLAB programming

**CURRENT READING** Recktenwald (Chapter 3), pp. 85-140

### Scripts

Scripts are just files which contain sequences of interactive MATLAB commands. Scripts do not have input or output parameters. Variables used in scripts affect the variables in the MATLAB variable space.

### Functions

Functions are MATLAB subprograms similar to subroutines found in programming languages C or Fortran. Functions can use both global variables and local variables. Functions can have multiple inputs and outputs.

**Functions have features scripts do not have. Scripts have no advantages over functions. Use functions, not scripts!**

### Examples

Look at the files `tanplot.m`, `threesum.m`, `addmult.m` and `twosum.m`. Which of these are **script** files and which of these are **function** m-files?

#### `tanplot.m`

```
theta = linspace(1.6,4.6);
tandata = tan(theta);
plot(theta,tandata);
xlabel('\theta      (radians)')
ylabel('tan(\theta)');
grid on;
axis([min(theta) max(theta) -5 5]);
```

#### `twosum.m`

```
function twosum(x,y)
% twosum Add two matrices and print the result
x+y
```

### **threesum.m**

```
function s = threesum(x,y,z)
% threesum Add three variables and returns the result
s = x+y+z;
```

### **addmult.m**

```
function [s,p] = addmult(x,y)
% addmult Compute sum and product of two matrices
s = x+y;
p = x*y;
```

### **easyplot.m**

```
D = load('xy.dat');
x = D(:,1); y =D(:,2);
plot(x,y)
xlabel('x axis')
ylabel('y axis')
title('Plot of generic x-y data')
```