

### ***7.7 COMPARISON BETWEEN SCRIPT FILES AND FUNCTION FILES***

Students who are studying MATLAB for the first time sometimes have difficulty understanding exactly the differences between script and function files, since for many of the problems that they are asked to solve using MATLAB, either type of file can be used. The similarities and differences between script and function files are summarized below.

- Both script and function files are saved with the extension `.m` (that is why they are sometimes called M-files).
- The first executable line in a function file is (must be) the function definition line.
- The variables in a function file are local. The variables in a script file are recognized in the Command Window.
- Script files can use variables that have been defined in the workspace.
- Script files contain a sequence of MATLAB commands (statements).
- Function files can accept data through input arguments and can return data through output arguments.
- When a function file is saved, the name of the file should be the same as the name of the function.
- A user-defined function is used in the same way as a built-in function. It can be used (called) in the Command Window, in a script file, or in another function.

### ***7.8 ANONYMOUS FUNCTIONS***

User-defined functions written in function files can be used for simple mathematical functions, for large and complicated math functions that require extensive programming, and as subprograms in large computer programs. In cases when the value of a relatively simple mathematical expression has to be calculated many times within a program, MATLAB provides the option of using anonymous functions. An anonymous function is a user-defined function that is defined and written within the computer code (not in a separate function file) and is then used in the code. Anonymous functions can be defined in any part of MATLAB (in the Command Window, in script files, and inside regular user-defined functions).

An anonymous function is a simple (one-line) user-defined function that is defined without creating a separate function file (m-file). Anonymous functions can be constructed in the Command Window, within a script file, or inside a regular user-defined function.