MONASH University

MONASH
ENGINEERING
ENG1060

BUILT-IN FUNCTIONS AND VARIABLES

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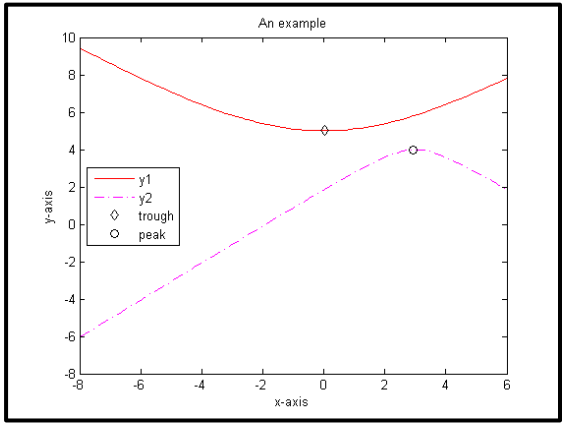
GROUP OF EIGHT AUSTRALIA

MATLAB BUILT-IN FUNCTIONS

- MATLAB has many built-in functions
  - These functions perform commonly used mathematical operations
  - Similar to the ones that your calculator can perform

- Some examples:
  - sqrt, mod, rem
  - log, log10, exp
  - sin, cos, tan
  - round, ceil, floor
  - min, max, sign



MATLAB BUILT-IN FUNCTIONS

Command Window

```
>> log10(4)

ans =

    0.6021

>> log(4)

ans =

    1.3863

>> log2(4)

ans =

     2
```

Command Window

```
>> floor(14.6)

ans =

    14

>> ceil(14.6)

ans =

    15

>> round(14.6)

ans =

    15
```

```
>> sind(90)

ans =

     1

>> sin(90)

ans =

    0.8940
```

```
>> sqrt(16)

ans =

     4

>> mod(27,9)

ans =

     0
```

MATLAB BUILT-IN VARIABLES

- MATLAB also has built-in variables
  - E.g. Imaginary number, Euler's number, infinity, pi, NaN, etc.

```
Command Window
>> i

ans =

   0.0000 + 1.0000i

>> exp(1)

ans =

    2.7183
```

```
Command Window
>> 1/0

ans =

   Inf

>> -1/0

ans =

  -Inf
```

```
>> j

ans =

   0.0000 + 1.0000i
```

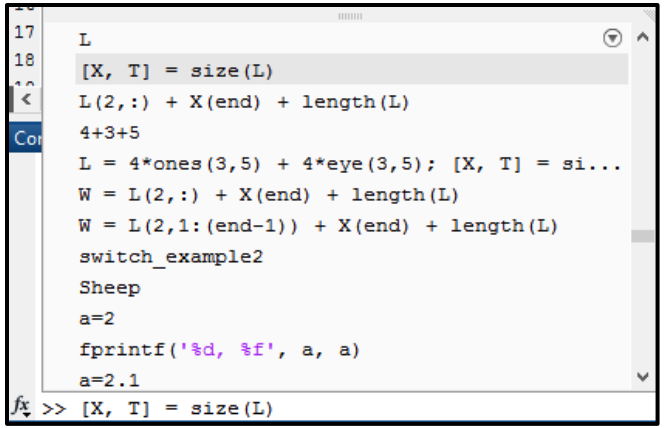
```
>> 0/0

ans =

   NaN
```

USEFUL BUILT-IN COMMANDS

- Useful commands to use in this unit
  - clc: Clears the command window
  - clear all: Clears all variables
  - close all: Closes all figure windows
  - fclose all: Closes all files opened by MATLAB
  - who: Lists existing variables
  - whos: Lists existing variables and other properties
  - dir: Lists files and folders in the current directory

CYCLING THROUGH COMMAND HISTORY

- Useful keyboard shortcuts
  - ↑: Go back one command
  - ↓: Go forward one command
  - TAB: Shows a list of similar commands



MATLAB HELP

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- If you know the name of the built-in function, type:

  help <function name> in the command window

- For more detailed information, type:

  doc <function name> in the command window

```
>> help tan
 tan    Tangent of argument in radians.
    tan(X) is the tangent of the elements of X.

    See also atan, atan2, tand, atan2d.

    Reference page in Help browser
       doc tan
```

MATLAB HELP

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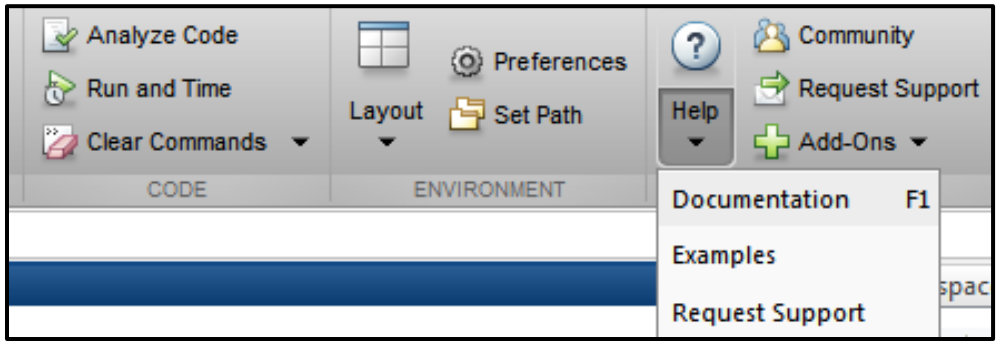
- What if you don't know the name of the function?
  - Try typing in key words in MATLAB's help documentation
  - Search related functions in help and check "see also" list

- Alternatively, search on Google!



SUMMARY

- MATLAB built-in functions and commands
- MATLAB built-in variables
- MATLAB help documentation

- What does "help elfun" do in MATLAB?