Demonstration 1 - MATLAB Review
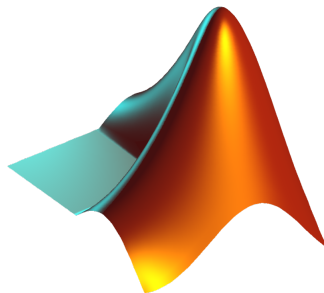
ME3060 - Dynamics Modeling and Controls Lab

Mechanical Engineering

Tennessee Technological University

Topic 1 - Basic Use

Topic 1 - Basic Use

- What and Why?

- Command Window Use

- Mathematics Functions

- Built-in Help

What and Why?

What is MATLAB?

- A High Level programming language
  - language written in C++
  - Interactive Development Environment written in JAVA
  - Windows, Mac, and Linux compatible

- The *MAT*rix *LAB*oratory

- The *Technical Computing Language* - Mathworks

What and Why?

Why use it?

- A powerful tool for engineers, scientists, and students
  - optimized floating point arithmetic and linear algebra
  - extensive library of mathematical functions and operations
  - specialized functions and operations

    - Aerospace
    - Robotics
    - Machine Learning

    - Image/Signal Processing
    - Embedded Systems and Controls

  - ability to use *symbolic programming*
- Ease of Access and Community
  - *Plug and Play*, it works out of the box
  - online community for sharing code, *MATLAB Central*

What and Why?

Why Not?

Command Window Use

Useful Commands (>> implies Command Window)

```
>> clear variables

>> clc

>> close all

>>

>>

>>
```

Mathematics Functions

Common Mathematics Functions

- sqrt()
- exp()
- log()

- log2()

- log10()

Other Useful Functions

- round()
- floor()
- int8()

- sign()
- rand()
- mod()

Built-in Help

The Built in Help

-       `>> help fzero()`

- use the help to get information about the built in functions

- the full documentation is also available online