

# CS 105

Introduction to Scientific Computing

Exam 1 Review

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# FORMAT

- Closed Book
- Regular Time/Place
- You may bring 1 page of hand written notes, both sides
  - MUST BE HAND WRITTEN

# TOPICS

- General Knowledge:
  - Data types
  - Valid variable names

# TOPICS

- Skills:
  - Tracing an algorithm
  - Writing formulae in MATLAB format
  - Plotting equations
  - Assignment in MATLAB
  - Accessing elements in vectors and matrices
  - Command-line I/O in MATLAB
    - disp
    - input
  - Evaluating complex boolean expressions
  - Writing scripts
  - Writing scripts with branching
    - If/Else
    - If/Elseif
    - Input verification

# DATA TYPES

- What are the different common/basic data types in computer science?
  - What's an example of each?

# VARIABLE NAMES

- What are the rules in MATLAB for variable names?
  - Examples of valid and invalid?

# FORMULAE/OPERATORS IN MATLAB

- Write  $2x^3/y$  in MATLAB
- What's the difference between `*` and `.*`?

# VECTORS/MATRICES

- Creating
  - Colon operator
  - Creation functions
    - zeros
    - ones
    - rand
- Accessing
  - end keyword
- Querying Functions
  - length
  - size



# COMMAND-LINE I/O

- Input
  - Numeric
  - Text
- Display
  - Concatenation

# EVALUATE BOOLEAN EXPRESSIONS

- Difference between `=` and `==`
- How to write “not”, “and” and “or” in MATLAB
  - How to write  $0 \leq x \leq 5$  in MATLAB
- Determining boolean values of expressions

# SCRIPTS

- Potting functions over a set of values
- Interactive computation scripts
  - Get input, do computation, display output
- Scripts that decide what to do based on branching statements