

MatLab Basics

Expected Skills.

Students can...

- *create their own scalar functions in MatLab.*
- *explain how to use the MatLab console for scientific computing.*
- *utilize for-loops, while-loops, and if-then statements in MatLab.*

Discussion Questions

- What sorts of things can you do from the console?
- What is the difference between a script, the console, and an m-file?
- What is the difference between a for-loop and a while-loop?
- How does if-then work in MatLab?

Creating an m-file Functions

- Let $f(n)$ be a function that computes the sum of the first n whole numbers.
 - Determine the values of $f(1)$, $f(5)$, and $f(-1)$.
 - How would you compute $f(5)$ using only the console?
 - Write a script that computes $f(n)$ for $n = 1, 2, 3, 4, 5$.
 - Code an m-file function that computes $f(n)$ for any n using a for-loop. How would your m-file change if you used a while-loop?
- Let $g(n)$ be a function that computes the product of the first n whole numbers. It may be helpful to define $g(0) = 1$.
 - Determine the values of $g(1)$, $g(5)$, and $g(-1)$.
 - How would you compute $g(5)$ using only the console?
 - Write a script that computes $g(n)$ for $n = 1, 2, 3, 4, 5$.
 - Code an m-file function that computes $g(n)$ for any n using a for-loop. How would your m-file change if you used a while-loop?
- Input-proof your m-file functions for $f(n)$ and $g(n)$ so that it will only accept appropriate values of n .