

## Lec17 IAM550 J. Raeder 10/28/2019 while loops, functions

### Announcement:

- Midterm I has been graded, returned, and grades entered into canvas
- Midterm II scheduled for Thursday, November 7, during class time, 60 minutes.

### All on the blackboard or real time MATLAB

- Rehash while loops
  - Factorial, count n down
  - For loop as a while loop
  - Endless loop with break and continue, even factorial, `rem()=r = a - b*fix(a./b)`
  - Sieve of Eratosthenes [https://en.wikipedia.org/wiki/Sieve\\_of\\_Eratosthenes](https://en.wikipedia.org/wiki/Sieve_of_Eratosthenes)
  - While loop squares until limit, also make nice printout
- Logicals:
  - List of operators: 0 (false) 1 (true) < > <= >= == ~=
  - Boolean && || ~
  - Operators with is\* (isfile etc.) <https://www.mathworks.com/help/matlab/ref/is.html>
- Functions:
  - In separate m-files: we did that, but from now on keep all in one file for simplicity.
  - `mylog(x)` use while to return for given precision (for  $-1 < x < 1$ ):
$$\ln(1 + x) = \sum_{k=1}^{\infty} \frac{(-1)^{k-1}}{k} x^k = x - \frac{x^2}{2} + \frac{x^3}{3} - \dots,$$
  - functions with more than 2 return values → fit function.
  - Global versus local variables, again.