**MAYBE WRITE THIS IN A JUPYTER NOTEBOOK INSTEAD? SHOULD THEN BE ABLE TO KEEP IT ON GITHUB AS A “REVIEW” FOLDER**

* What is a matrix
  + Coordinates: (row, column)
  + Each number is an “entry”
  + Leading Entry: leftmost entry of row
  + 2D array of numbers
  + Variable Representation: capital letter
  + Size Syntax: Row \* Column
  + Square matrix
    - Main Diagonal: starting from top left and going to bottom right
    - Identity Matrix: 1 on main diagonal and 0 everywhere else
  + Zero Matrix
  + Multiply a matrix by a number, multiply all entries by number
  + Adding/Subtracting Matrices
* Understanding Notation
* Representing Equations w/ Matrices
  + System of linear equations
    - EXAMPLE:
    - System Solution: Set of variables which result in output
    - Solution Set: Set of all system solutions
    - Consistent System: At least one solution present
      * Either one solution or infinitely many
      * One: Unique
      * Infinite: Non-Unique
    - Inconsistent System: No solution present
  + Homogeneous System: All output are 0
    - Always has the trivial solution of 0 for every variable
    - Theorem: If there are more unknowns than equations, then the system has non-trivial solutions.
  + Coefficient matrix
  + Augmented matrix (coefficient matrix with then also the answer)
  + Solution set is values of inputs (variables) to get output
* Solving w/ Matrix
  + Elementary Row Operations: Operations which leave resulting matrix row equivalent to original
    - Interchange: Switch rows
    - Scaling: Scale all values in row
    - Replacement: Add a multiple of one row to another row
  + Solving Linear Systems w/ a Matrix:
    - Elementary Row Operations
    - Echelon Form – (get there with Gaussian Elimination?)
      * When row of zeroes, infinitely-many solutions
      * When one variable left, one solution
      * When row with only augmented column value, no solutions
    - Reduced Echelon Form:
* Advanced Operations w/ Matrix
  + Multiplying Matrices: should this be included here or not?
  + Matrix Inverse
  + Inverse: must be square;
* Matrix-Vector Multiplication
* Matrix-Matrix Multiplication
* Norm
* Transpose
* Inverse
* Determinant
* Coordinates of matrix (row, column)