

Attached material will help refresh your mathematics

 about the basics of linear equations and matrix operations.

**Three (basic) operations permitted for solving systems of linear equations:**

1. **You may multiply any row by any non-zero constant.**
2. **You may swap any row with any other row.**
3. **You may add a linear combination of ANY row to ANY other row.**

**Matrix addition and subtraction.**

To be able to add together arrays, their dimensions must be the same!

The sum of two arrays (assuming they have the same dimensions and can be added together) will be the same as the original arrays.

**Example:**

A + C or B + C cannot be done (since the array dimensions are NOT the same)



**This is the identity array for matrix multiplication.**

**I =** $\left[\begin{matrix}1&0\\0&1\end{matrix}\right]$

**Matrix multiplication**

The columns of the 1st array must = the rows of the 2nd array otherwise the arrays cannot be multiplied together! **If** they can be multiplied together then:

The product array dimensions will be the rows of the 1st array by the columns of the 2nd array.

**Example**



**Given the following arrays:**



 I = $\left[\begin{matrix}1&\cdots &0\\\vdots &\ddots &\vdots \\0&\cdots &1\end{matrix}\right]$





**Examples of matrix operations:**

1.



2.



3.



4.



5.

.



8.





is the identity array

9.

