1 | Intuition

In a linear map $T : V \to W$, the dimension of the domain V is amount of stuff that you throw away (null space) **plus** the amount of stuff that does not get thrown away (the column space). ~~If T is a map from V to W, then the dimension of the source map V is the dimension of the null space (everything in V that T takes to 0) plus the dimension of the range (all possible things taken to by T)~~

2 | #definition Fundamental Theorem of Linear Maps def

Suppose V is finite-dimensional and $T \in L(V, W)$. Then range T is finite-dimensional and

$$\dim V = \dim \text{null } T + \dim \text{range} T$$

2.1 | See also dimension, null space, and range of a function.

3 | AKA: Rank Nullity Theorem

This is a subset of the Fundamental Theorem of Linear Algebra (#todo-expand)