1. The order in which you present information is important! If you are trying to prove an equality, do not start with the equality that you are trying to prove and show that it implies a true statement. For example,
$$0 = 3 \implies 0 = 0,$$
but that does not prove that $0 = 3$. Alternatively, you can start with one expression and show a chain of equalities that end with the other side of the expression you are trying to prove. For example, if you are trying to prove that $\frac{1}{(x+1)(x-2)} = \frac{-1}{2(x+1)} + \frac{1}{2(x-1)}$, you can show
$$\frac{1}{(x+1)(x-1)} = \frac{\frac{x}{2} - \frac{x}{2} + \frac{1}{2} + \frac{1}{2}}{(x+1)(x-1)} = \frac{\frac{-1}{2}(x-1) + \frac{1}{2}(x+1)}{(x+1)(x-1)} = \frac{-1}{2(x+1)} + \frac{1}{2(x-1)},$$
where each expression follows from the previous. it is never ok to assume what you are trying to prove in your proof!

2. Put axiom numbers above equalities like this: $\overset{\text{axiom 4}}{=}$.

3. For a vector space, it is not always true that $-a = (-1)a$. $-a$ denotes a unary operation that gives the inverse of a. So, when proving a statement axiomatically, $-(a+b)$ is the inverse of the vector $a+b$, and cannot always be written $-a-b$. If it is true that $-a = (-1)a$, then
$$-(a+b) = (-1)(a+b) = (-1)a + (-1)b = -a + (-b).$$
Subtraction is commonly defined as $a - b = a + (-b)$, but without stating a like definition, you cannot use the $-$ symbol as a binary operation.

4. Some vector spaces are uncountable infinite in size, so it is impossible to list the elements of all vector space. So, do not write something about a vector space, $V = \{v_1, v_2, \ldots, v_p\}$.

5. A lot of times, the easiest way to prove that something is unique is to suppose indirectly that it is *not* unique and then show that this leads to a contradiciton. For example, if you show that the objects that you had supposed to be distinct, are equal, this contradicts your supposition, so by Modus Tollens, your supposition is false.

NOTE: If you are interested in learning to type in LaTeX(it is a good skill to have and comes in handy in many courses and situations), reach out to the department and they will put you in contact with me or another student who can help you learn it.