Proof, that $3 = 2$

We assume that

$$a + b = c$$

Now, we know that

$$3a - 2a = a, \quad 3b - 2b = b \quad \text{und} \quad 3c - 2c = c$$

It follows that

$$3a - 2a + 3b - 2b = 3c - 2c$$

We take all terms with 3 to the left and all with 2 to the right and simplify afterwards:

$$3a + 3b - 3c = 2a + 2b - 2c$$

$$3(a + b - c) = 2(a + b - c)$$

Of course we now can cancel $(a + b - c)$ on both sides

$$3 \cdot (a + b - c) = 2 \cdot (a + b - c)$$

and we get

$$3 = 2$$

as was to be shown.

Or did we do something wrong somewhere?