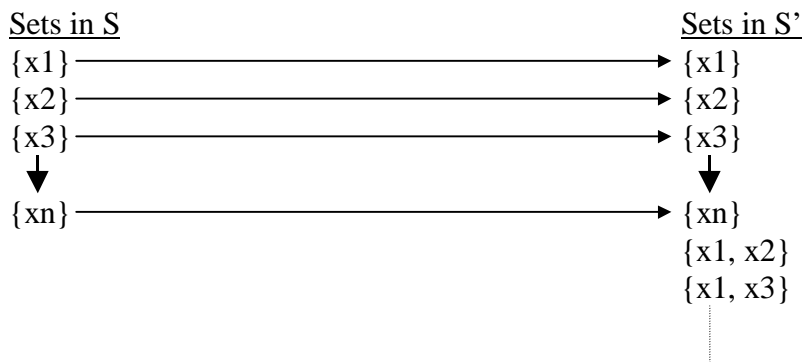


Is a set in one-to-one Correspondence with its power set?

Here is why we know that a set can not be in one-to-one correspondence with its power set:

A power set of the set S , denoted S' , is the set of all subsets of S . For example:

$$S = \{x_1, x_2, \dots, x_n\}$$



Just stopping here we can see the lack of a one-to-one correspondence. Every element of S is mapped to a matching element in S' . When this is finished, there are some elements of S' that do not match up to elements of S . From this we can see why the finite set is not in one-to-one correspondence with its power set, with the exception of the empty set. But here is the explanation for the empty set:



Since the power set of S contains the set containing the empty set as well as the empty set, then the empty set is also lacking a one-to-one correspondence.