

The Sixteen-fold Way

How many functions $f : A \rightarrow B$ are there?

Or, how many ways can one place a articles in b boxes?

Elements of A	Elements of B	Arbitrary function	1 – 1 function	Onto function	Bijection
Distinguishable	Distinguishable				
Indistinguishable	Distinguishable				
Distinguishable	Indistinguishable				
Indistinguishable	Indistinguishable				