Sets and combinatorics

- Rule of sum (addition principle)

- Mathematical induction

  - Base case (basis)
  - Induction step (step case)

- Inclusion-Exclusion principle

- Characteristic function

- Functions. A function is a process that associates to each element of a set X at most one element of a set Y.

- Domain: notation $f : X \to Y$ stands that X is the domain of f. We say f maps X to Y if $f : X \to Y$.

- "a function from X to Y" stands that the domain of f is a subset of X.

- Injection, surjection and bijection (injective, surjective and bijective functions)

- An injection maps X into Y

- A surjection maps X onto Y

- A bijection is one-to-one correspondence