Partitions of Sets

• A collection S of subsets of a set A is called **pairwise disjoint** if every two distinct subsets that belong to S are disjoint.

• A **partition** of A can be defined as a collection S of non-empty subsets of A such that every element of A belongs to exactly one subset in S

• There are three ways that a collection of S of subsets of a non-empty set A is defined to be a partition of A

Definition 1 The collection S consits of pairwise disjoint non-empty subsets of A and every element of A belongs to a subset in S.

Definition 2 The collection S consists of non-empty subsets of A and every element of A belongs to exactly one subset in S

Definition 3 The collection S consists of subsets of A satisfying the three properties:

(1) every subset in S is non-empty and,

(2) every two subsets of A are equal or disjoint and

(3) the union of all subsets in S is A.