POWER SET OF A SET

Let $\Phi \neq D$

Then $P_D = \{ A \mid A \subseteq D \}$ is called the power set of D

In other words, P_D Consists of all subsets of D :

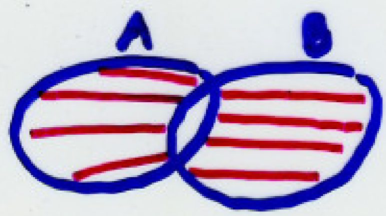
P_D

Define the following binary operation $+$ on P_D :

$$\forall A, B \in P_D \quad A + B = \underbrace{(A \sim B) \cup (B \sim A)}$$

This is called the symmetric difference of A and B

idea:



Then we can show that $\langle P_D, + \rangle$ is a group.

NOTE: If D is a finite set with n elements then P_D will have 2^n elements. This idea will help to construct certain finite groups.