

0.1 Algebra on a set

0.1.1 Standard algebra

An algebra, Σ , on set s is a set of subsets of s such that:

- Closed under intersection: If a and b are in Σ then $a \cap b$ must also be in Σ
- $\forall ab[(a \in \Sigma \wedge b \in \Sigma) \rightarrow (a \cap b \in \Sigma)]$
- Closed under union: If a and b are in Σ then $a \cup b$ must also be in Σ .
- $\forall ab[(a \in \Sigma \wedge b \in \Sigma) \rightarrow (a \cup b \in \Sigma)]$

If both of these are true, then the following is also true:

- Closed under complement: If a is in Σ then $s \setminus a$ must also be in Σ

We also require that the null set (and therefore the original set, null's complement) is part of the algebra.