Problem Set

Problem 1. *Let $\mathscr{A}$ be a σ-algebra. Show that if $A_1, A_2, \ldots, A_n \in \mathscr{A}$, then*

i) $A_1 \cap A_2 \cap \cdots \cap A_n \in \mathscr{A}$

ii) $A \in \mathscr{A} \iff A^c \in \mathscr{A}$

iii) $A, B \in \mathscr{A} \implies A \backslash B \in \mathscr{A}$ *and* $A \triangle B$

Problem 2. *Let $X = \mathbb{R}$, find the σ-algebra generated by the sigletons $A = \{\{x\} : x \in \mathbb{R}\}$*