Mathematical Analysis in Machine Learning reading notes

I haven't thought of a title yet

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What is the first

this is my first time to write note all in English.

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1   Preliminaries

Definition 1 *Let $\mathcal{D}$ be a collection of sets. The union of $\mathcal{C}$, denoted by $\bigcup \mathcal{C}$, is the set defined by*

$$\bigcup \mathcal{C} = \{x | x \in S \, for \, some \, S \in \mathcal{C}\}.$$