- Let $C_0(\mathbb{R}) = \{f \colon \mathbb{R} \to \mathbb{R} | f \text{ is continuous } \wedge f(0) = 0\}$.
- For any $f \in C_0(\mathbb{R})$, we define the set

$$A_f = \{z \in \mathbb{R} : f(z) = 0\}.$$

Then

$$\bigcup_{f \in C_0(\mathbb{R})} A_f = \mathbb{R}, \qquad \bigcap_{f \in C_0(\mathbb{R})} A_f = \{0\}.$$