

Reminder I

- Topological notions : open, closed, boundary, interior, closure.
- Multi-index $\alpha \in \mathbb{N}^n$, $\alpha = (\alpha_1, \dots, \alpha_n)$, $|\alpha| = \sum_{j=1}^n \alpha_j$.
 $\mathbb{R} \alpha \subset \mathbb{C}$ $\Leftrightarrow C^\infty$
- $f: \mathbb{R}^n \rightarrow \mathbb{K}$ is smooth if $d^\alpha f$ exists and is continuous, $\forall \alpha \in \mathbb{N}^n$.
- support $\text{supp}(f) = \overline{\{x \in \mathbb{R}^n \mid f(x) \neq 0\}}$.
 \leftarrow closure
- Test functions $\mathcal{D}(\mathbb{R}^n) = \{f \mid \text{smooth} + \text{bounded support}\}$
- Convergence in $\mathcal{D}(\mathbb{R}^n)$ \leftarrow sup-norm $\|\cdot\|_\infty$
- Distribution : $T: \mathcal{D}(\mathbb{R}^n) \rightarrow \mathbb{K}$, linear + continuous
set of distributions = $\mathcal{D}'(\mathbb{R}^n)$.
- Examples : T_h , δ_0 , δ_0^α .
 \leftarrow regular distribution, with $h \in L^1_{\text{loc}}(\mathbb{R}^n)$