examples of filters

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Defines	cofinite filter
Defines	Fréchet filter

- If X is any set and $A \subseteq X$ then $\mathcal{F} = \{F \subseteq X \colon A \subseteq F\}$ is a fixed filter on X; $\mathcal{F}$ is an ultrafilter iff A consists of a single point.

- If X is any infinite set, then $\{F \subseteq X \colon X \smallsetminus F \text{ is finite }\}$ is a free filter on X, called the *cofinite filter*.

- The filter on $\mathbb{R}$ generated by the filter base $\{(n, \infty) \colon n \in \mathbb{N}\}$ is called the *Fréchet filter* on $\mathbb{R}$; it is a free filter which does not converge or have any accumulation points.

- The filter on $\mathbb{R}$ generated by the filter base $\{(0, \varepsilon) \colon \varepsilon > 0\}$ is a free filter on $\mathbb{R}$ which converges to 0.