Discussion Notes

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1 Discussion 1

If X is an F_σ set, then

$$X = \bigcup_{i=1}^{\infty} F_i \quad \text{with each } F_i \text{ closed.}$$

If X is a G_δ set, then

$$X = \bigcap_{i=1}^{\infty} G_i \quad \text{with each } G_i \text{ open.}$$

A set A is *nowhere dense* iff $(\overline{A})^\circ = \emptyset$ iff for any interval I, there exists a subinterval S such that $S \bigcap A = \emptyset$. This is a set that is not dense in any nonempty open set. If the closure of a subset of $\mathbb{R}$ contains no open intervals, it will be nowhere dense.

A set A is *meager* or *first category* if it can be written as

$$A = \bigcup_{i\in\mathbb{N}} A_i \quad \text{with each } A_i \text{ nowhere dense}$$

A set A is *null* if for any ε,