

This note, that [was found here](#), as a part of [a collection](#) is written (completely with human hands) by [Rupadarshi Ray](#), was created on July 17, 2022 3:52:18 PM, was last modified on May 17, 2026 7:37:12 PM, and was exported on September 7, 2026 3:25:03 PM.

interior, exterior, boundary points in a metric space

Definition. Interior point

Let $S \subseteq M$ and $x \in S$. Then x is an interior point of S if

$$\exists r > 0; r-B_M(x) \subseteq S.$$

Definition. Interior of S

$$\text{int}(S) := \text{interior points of } S$$

Definition. Boundary point

Let $S \subseteq M$ and $x \in S$. Then x is a boundary point of S if $\forall r > 0$

$$r-B_M(a) \cap S \neq \emptyset$$

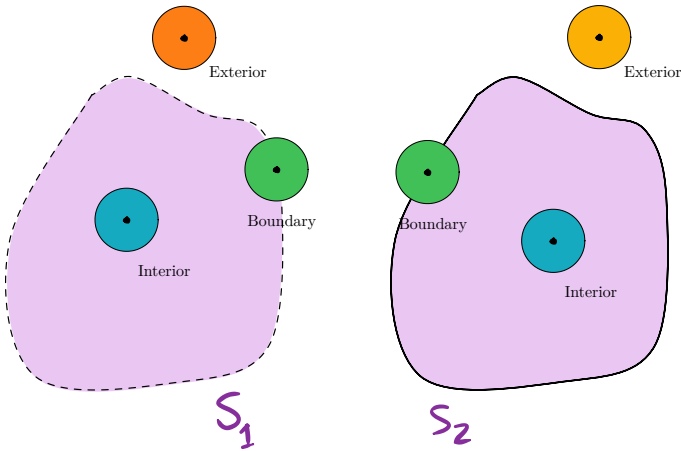
and

$$r-B_M(a) \cup M \setminus S \neq \emptyset$$

Definition. Exterior points

Let $S \subseteq M$ and $x \in S$. Then x is an exterior point of S if

$$\exists r > 0; r-B_M(x) \subseteq M \setminus S.$$



$$\text{int}(S) \subseteq S$$

Definition. Exterior of S

$$\text{ext}(S) := \text{exterior points of } S$$



$$\text{ext}(S) = \text{int}(M \setminus S)$$



$$\text{int}(S), \text{ext}(S), \partial S \text{ partition } M$$

Current note has 0 direct children and 0 total descendants.

- [structures based on sets](#)
 - [Metric spaces](#)
 - [Metric spaces](#)
 - [interior, exterior, boundary points in a metric space](#)

And it has 9 siblings.

- [structures based on sets](#)
 - [Metric spaces](#)
 - [Metric spaces](#)
 - [adherent, accumulation points, closure of a subset in a metric space](#)
 - [Balls in a metric space](#)
 - [Totally bounded subsets of a metric space](#)
 - [Compact subsets of a metric space](#)
 - [Covering of a subset of a metric space](#)
 - [Open cover of a compact metric space](#)
 - [Function between metric spaces](#)
 - [interior, exterior, boundary points in a metric space](#)
 - [open and closed sets in a metric space](#)