

Proposition: Boundary and Interior are Disjoint

$$\partial S \cap \mathring{S} = \emptyset$$

Proof

Let $x \in \partial S \stackrel{\text{D}}{=} \overline{S} \setminus \mathring{S}$, therefore $x \notin \mathring{S}$. Thus it is impossible to have an element both in ∂S and \mathring{S} at once. ■