

**Definition 8.0.4.** [OG7] Let  $A, B \subseteq X$  be two subsets.

1. The **interior** of  $A$ , denoted by  $A^\circ$ , is the union of all the open sets contained in  $A$ , and therefore is the biggest open set contained in  $A$ ;
2. the **closure** of  $B$ , denoted by  $\bar{B}$ , is the intersection of all the closed sets that contain  $B$ , i.e. is the smallest closed that contains  $B$ .
3. We say that  $A$  is **dense in**  $B$  if  $\bar{A} \supseteq B$ .<sup>a</sup>
4. The **boundary**  $\partial A$  of  $A$  is  $\partial A = \bar{A} \setminus A^\circ$ .

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<sup>a</sup>Often when you say "A is dense in B" it happens that  $B$  is closed and  $A \subseteq B$ : in this case "dense" is just  $\bar{A} = B$ .