

1. WORKSHEET AUG 30

Exercise 1.1. *State what it means for p not to be a limit point of a set A .*

Definition 1.1. *Let (a, b) be an open interval. We define the exterior of (a, b) to be the set $\mathcal{C} \setminus [a, b]$.*

Exercise 1.2. *Show that no element of the exterior of (a, b) is a limit point of (a, b) , and vice versa.*

Exercise 1.3. *If two open intervals have a point x in common, their intersection is an open interval containing x .*

Exercise 1.4. *Let $A, B \subset \mathcal{C}$. If p is a limit point of $A \cup B$, then p is a limit point of A or B .*

Exercise 1.5. *Let A_1, \dots, A_n be n subsets of \mathcal{C} . Then p is a limit point of $A_1 \cup \dots \cup A_n$ if and only if p is a limit point of at least one of the sets A_k .*

Exercise 1.6. *If p and q are distinct points of \mathcal{C} , then there exist disjoint open intervals I_1 and I_2 containing p and q , respectively.*

Exercise 1.7. *A subset of \mathcal{C} consisting of one point has no limit points.*

Exercise 1.8. *A finite subset $A \subset \mathcal{C}$ has no limit points.*