Problem 9. If H is a point set and K is a point set and p is a limit point of H ∪K, then p is a limit point of H or p is a limit point of K

Proof by contradiction

Let p be a limit point of HUK, and suppose P is not a limit point of H or K

Case 1: p is not a limit point of H

Then by definition of union p is a limit point of K, which is a contradiction against our assumption.

Case 2: p is not a limit point of K

Then by definition of union p is a limit point of H, which is a contradiction against our assumption.

Therefore if p is a limit point of H U K, then then p is a limit point of H or p is a limit point of K