

$$(Y \cup \partial Y)^c$$

$$\partial Y$$

Y

$$B$$

 S_1

A'

The diagram illustrates a set partitioning problem. A large gray region is divided into three sub-regions: A' (dark gray), B (light gray), and C (white). Five points, $S_1, S_2, S_3, S_4,$ and S_5 , are distributed across these regions. S_1 is in A' , S_2 is on the boundary between A' and B , S_3 is in B , S_4 is on the boundary between B and C , and S_5 is in C .