

Problem: Given $A \subset B$, show that $C - B \subset C - A$

Solution :

$A \subset B \Rightarrow$ Every element of A belongs to B as well.

In other words, any element which doesn't belong to B will not belong to A - (1)

Let us consider an arbitrary element $y \in C - B$. To show that $C - B \subset C - A$, we need to show that $y \in C - A$ as well.

$$y \in C - B$$

$$\therefore y \in C \text{ \& } y \notin B \text{ [By definition]}$$

$$y \notin B \Rightarrow y \notin A \text{ - From (1)}$$

$$\therefore y \in C \text{ \& } y \notin A$$

$$\therefore y \in C - A \text{ [By definition]}$$

$$\therefore \underline{\underline{C - B \subset C - A}}$$