1) In the Venn Diagram below, shade the region corresponding to $A \cap (C \cup B)^c$. (15 points)

![Venn Diagram](image)

T or F 2) Based on the picture, $A \subseteq B$. (10 points)

3) Describe in one sentence what a “proof” is. (15 points)
4) Let $A$, $B$, and $C$ be sets. Prove the following statement: $[A \subseteq (B \cap C)] \Rightarrow [(A \subseteq B) \land (A \subseteq C)]$ (100 points)