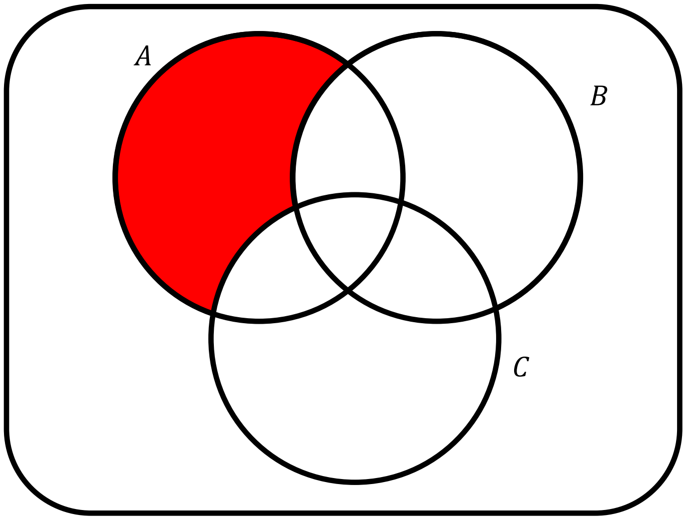
Name ___Solutions____ Transitions, Quiz 1

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



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

3) Describe in one sentence what a "proof" is. (15 points)

Answers varied; essentially a proof is a series of statements connected by deductive reasoning to establish that same claim is true.

4) Let A, B, and C be sets. Prove the following statement: $[A \subseteq (B \cap C)] \Rightarrow [(A \subseteq B) \wedge (A \subseteq C)]$ (100 points)

Assume that $A \subseteq B \cap C$.

Let's take some arbitrary element, say x of A. That is, $x \in A$. Thus $x \in B \cap C$. This means that $x \in B$ as well as $x \in C$. Hence $A \subseteq B$ because we showed that x was necessarily in B. Similarly $A \subseteq C$.

Therefore, we have shown $A \subseteq (B \cap C)$ implies $(A \subseteq B) \wedge (A \subseteq C)$.