For problems 1-3, use the sets $A = (1,7)$, $B = [4,10]$, and $C = \{2,7,11\}$.

1) Find $A \cup B$

(1,10]

2) Find $A - C$

$(1,2) \cup (2,7) = \{x \in \mathbb{R}|1 < x < 2 \text{ or } 2 < x < 7\}$

3) Find $B \cap C$

$\{7\}$

4) Let A, B, and C be sets. Prove the statement below.

If $A \subseteq B$ and $B \subseteq C$, then $A \subseteq C$

Assume $A \subseteq B$ and $B \subseteq C$. Suppose $x \in A$. Then because $A \subseteq B$, we also know $x \in B$. We next use $B \subseteq C$ to determine that $x \in C$. This concludes the theorem, that $A \subseteq C$.