**Question**

Prove that $A - (B \cup C) = (A - B) \cap (A - C)$, for sets A, B and C.

**Solution**

$A - (B \cup C) = A \cap \overline{B \cup C} = A \cap (\overline{B} \cap \overline{C}) = A \cap \overline{B} \cap \overline{C}$.

Then $(A - B) \cap (A - C) = (A \cap \overline{B}) \cap (A \cap \overline{C}) = A \cap \overline{B} \cap A \cap \overline{C} = A \cap \overline{B} \cap \overline{C}$.

Hence $A - (B \cup C) = (A - B) \cap (A - C)$

Q.E.D.