Directions. Please submit your answer to the following problem in a LaTeX-prepared document. Class participants are encouraged to prepare solutions in a collaborative mode but to prepare their to-be-submitted write-ups individually. The consequences of sharing files, electronic or otherwise, are discussed in the course syllabus.\footnote{If the wording of this problem was discussed in detail in the classroom, the course instructor expects to see similar phrases and sentences in reading the submissions.}

Please include the problem number along with a statement of the problem in your submission. Please also include your e-mail address.

Recall that $x \in B \setminus A$ if and only if both $x \in B$ and $x \notin A$. That is, $B \setminus A = \{x : x \in B \land x \notin A\}$.

**Problem.** Let $A$ and $B$ denote subsets of a set, $U$. Prove that

$$A^c \cap (A \cup B) = B \setminus A.$$