

Answer on Question #79106–Math– Discrete Mathematics

Question

$(A \setminus B) \cup C = A \setminus (B \cap C)$ for any three sets A, B and C . Is the statement true or false? Give justification in support of your answer.

Solution

Consider, for example, sets $A = \{1; 2; 3; 4\}, B = \{1; 2; 3\}, C = \{2; 5\}$.

Note that $A \setminus B = \{4\}, (A \setminus B) \cup C = \{2; 4; 5\}, B \cap C = \{2\}, A \setminus (B \cap C) = \{1; 3; 4\}$.

In this case $(A \setminus B) \cup C \neq A \setminus (B \cap C)$, hence the statement is false.

Answer: the statement is false.