Conditions

One of the following is false

(A) A∪B=x:x∈Aorx∈B
(B) A\(B U C) = (A\B)n(A\C)
(C) A\(B U C)= (A\B)U(A\C)
(D) A\(B n C) = (A\B)U(A\C)
Please explain

Solution

The false statement is C.

Explanation:

Consider point b from set A and B but not from C:

$b \epsilon A \cap B, b \cap C = \emptyset$

Consider set $A\backslash(B \cup C)$. b is not from this set, as $b \epsilon A \cap B, \rightarrow, b\epsilon B$:

$b \cap A\backslash(B \cup C) = \emptyset$

Consider set $(A\backslash B) \cup (A\backslash C)$. The first set doesn't have point b in it, as b is from B, but the second set has this point in, because b is from A, but b isn't from C, so if we exclude all C points from A, there will remain our point b. As we have a $\cup$ between, it means, that there is point b in $(A\backslash B) \cup (A\backslash C)$

So, on the left side of this set equation we have a set, which doesn't include point b and on the right side – a set which includes this point. **Here is a false**.