Formatif task (D): Show that $A \cup (A \cap B) = A$.

Restart

$A \cup (A \cap B)$

$= (A \cap \mathcal{U}) \cup (A \cap B)$	Identity of $\cap$
$= A \cap (\mathcal{U} \cup B)$	Distributivity of $\cap$ over $\cup$
$= A \cap ((B \cup B^c) \cup B)$	Complement with $\cup$
$= A \cap ((B^c \cup B) \cup B)$	Commutativity of $\cup$
$= A \cap (B^c \cup (B \cup B))$	Associativity of $\cup$
$= A \cap (B^c \cup B)$	Idempotence of $\cup$
$= A \cap (B \cup B^c)$	Commutativity of $\cup$
$= A \cap \mathcal{U}$	Complement with $\cup$
$= A$	Identity of $\cap$

Edit