

1. Prove that the following identities hold in any Boolean algebra:

(a) $x \vee x = x$

(b) $x \wedge x = x$

(c) $x \vee 1 = 1$

(d) $(x \wedge y) \vee x = x$ (absorption law)

2. Let x and y be elements of a Boolean algebra. Prove that $x \vee y = y$ if and only if $x \wedge y = x$.