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

  (a) $x \vee x = x$ (idempotent law)
  (b) $x \vee 1 = 1$
  (c) $(x \wedge y) \vee x = x$ (absorption law)
  (d) What are the duals of these identities?

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