Exercise 1:
Find the values of these expressions.

a) $1 \cdot \bar{0}$
b) $1 + \bar{1}$
c) $\bar{0} \cdot 0$
d) $\overline{(1 + 0)}$

Exercise 2:
The Boolean operator $\oplus$, called the XOR operator, is defined by $1 \oplus 1 = 0, 1 \oplus 0 = 1,$ $0 \oplus 1 = 1$, and $0 \oplus 0 = 0$. Simplify these expressions.

a) $x \oplus 0$ b) $x \oplus 1$ c) $x \oplus x$ d) $x \oplus \bar{x}$

Exercise 3:
What values of the Boolean variables x and y satisfy $xy = x + y$?

Exercise 4:
Prove the second absorption law $x(x + y) = x$ using the other Boolean identities.
Do not use the first absorption law.

Exercise 5:
Use a table to express the values of the Boolean function $F(x, y, z) = x\bar{y}z + \overline{(xyz)}$

Exercise 6:
Find the sum-of-products expansions of these Boolean functions.

a) $F(x, y) = x + y$ b) $F(x, y) = xy$
c) $F(x, y) = 1$ d) $F(x, y) = y$