

BOOLEAN ALGEBRA
GBW ACSL CONTEST #3
WORKSHEET #1

1 Simplify

Simplify the following:

1. $AAA(A + A)$
2. $\overline{(\overline{A} + B)} + A$
3. $(A + B)(B + \overline{A})$
4. $(A + \overline{B})(B + \overline{A})$
5. $A\overline{B}(\overline{A} + B)$
6. $A\overline{B}(B + C) + \overline{C}(A\overline{B} + \overline{C})$
7. $\overline{A + B + \overline{A}B}$
8. $A(\overline{B} + C) + B(A + \overline{C}) + C(\overline{A} + B)$
9. $(\overline{B} * \overline{A}) + \overline{A}(B + C)$

2 Solve

Answer the following. Denote the ordered pairs and ordered triples with parentheses and commas such as: $(1, 0, 1)$. By the way, an ordered pair that "satisfies" an expression is one that makes it TRUE or when the result is 1.

1. Simplify the following as much as possible. Then, find all ordered pairs (A, B) that satisfy the expression.

$$(\overline{A + B})(\overline{AB})$$

2. Simplify the following as much as possible. Then, find all ordered pairs (A, B) that satisfy the expression.

$$\overline{A + B + \overline{A}B}$$

3. Simplify the following as much as possible. Then, find all ordered triples (A, B, C) that satisfy the expression.

$$A(B \oplus C) + \overline{A}(BA)$$