

LAWS OF BOOLEAN ALGEBRA

Math 3200, 8/28/03

Commutative laws

$$A \cup B = B \cup A$$

$$A \cap B = B \cap A$$

Associative laws

$$A \cup (B \cup C) = (A \cup B) \cup C$$

$$A \cap (B \cap C) = (A \cap B) \cap C$$

Distributive laws

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$$

$$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$$

Idempotent laws

$$A \cup A = A$$

$$A \cap A = A$$

Absorption laws

$$A \cup (A \cap B) = A$$

$$A \cap (A \cup B) = A$$

Identity laws

$$A \cup \emptyset = A$$

$$A \cap \emptyset = \emptyset$$

$$A \cup U = U$$

$$A \cap U = A$$

Complement laws

$$(A')' = A$$

$$\emptyset' = U$$

$$A \cup A' = U$$

$$A \cap A' = \emptyset$$

De Morgan laws

$$(A \cup B)' = A' \cap B'$$

$$(A \cap B)' = A' \cup B'$$