

Laws of Logical Equivalence

Janet Davis, from VanDrunen (2013), section 3.4, p. 104

September 14, 2018

Commutative laws:	$p \wedge q \equiv q \wedge p$	$p \vee q \equiv q \vee p$
Associative laws:	$(p \wedge q) \wedge r \equiv p \wedge (q \wedge r)$	$(p \vee q) \vee r \equiv p \vee (q \vee r)$
Distributive laws:	$p \wedge (q \vee r) \equiv (p \wedge q) \vee (p \wedge r)$	$p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$
Absorption laws:	$p \wedge (p \vee q) \equiv p$	$p \vee (p \wedge q) \equiv p$
Idempotent laws:	$p \wedge p \equiv p$	$p \vee p \equiv p$
Double negative law:	$\sim \sim p \equiv p$	
DeMorgan's laws:	$\sim (p \wedge q) \equiv \sim p \vee \sim q$	$\sim (p \vee q) \equiv \sim p \wedge \sim q$
Negation laws:	$p \vee \sim p \equiv T$	$p \wedge \sim p \equiv F$
Universal bound laws:	$p \vee T \equiv T$	$p \wedge F \equiv F$
Identity laws:	$p \wedge T \equiv p$	$p \vee F \equiv p$
Tautology and contradiction laws:	$\sim T \equiv F$	$\sim F \equiv T$