## Table of Logical Equivalences

Commutative	$p \wedge q \iff q \wedge p$	$p \vee q \iff q \vee p$
Associative	$(p \wedge q) \wedge r \iff p \wedge (q \wedge r)$	$(p \vee q) \vee r \iff p \vee (q \vee r)$
Distributive	$p \wedge (q \vee r) \iff (p \wedge q) \vee (p \wedge r)$	$p \vee (q \wedge r) \iff (p \vee q) \wedge (p \vee r)$
Identity	$p \wedge T \iff p$	$p \vee F \iff p$
Negation	$p \vee \sim p \iff T$	$p \land \sim p \iff F$
Double Negative	$\sim (\sim p) \iff p$	
Idempotent	$p \wedge p \iff p$	$p \lor p \iff p$
Universal Bound	$p \lor T \iff T$	$p \wedge F \iff F$
De Morgan's	$\sim (p \land q) \iff (\sim p) \lor (\sim q)$	$\sim (p \vee q) \iff (\sim p) \wedge (\sim q)$
Absorption	$p \vee (p \wedge q) \iff p$	$p \wedge (p \vee q) \iff p$
Conditional	$(p \implies q) \iff (\sim p \lor q)$	$\sim (p \implies q) \iff (p \land \sim q)$

## Rules of Inference

Modus Ponens	$p \implies q$	Modus Tollens	$p \implies q$
	p		$\sim q$
	$\therefore q$		∴ $\sim p$
Elimination	$p\vee q$	Transitivity	$p \implies q$
	$\sim q$		$q \implies r$
	$\therefore p$		$\therefore p \implies r$
Generalization	$p \implies p \vee q$	Specialization	$p \wedge q \implies p$
	$q \implies p \vee q$		$p \wedge q \implies q$
Conjunction	p	Contradiction Rule	$\sim p \implies F$
	q		$\therefore p$
	$\therefore p \wedge q$		

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