

equivalence laws

$p \wedge T \Leftrightarrow p$	identity
$p \vee F \Leftrightarrow p$	
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$p \vee T \Leftrightarrow T$	domination
$p \wedge F \Leftrightarrow F$	
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$p \vee p \Leftrightarrow p$	idempotent
$p \wedge p \Leftrightarrow p$	
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$p \vee q \Leftrightarrow q \vee p$	communative
$p \wedge q \Leftrightarrow q \wedge p$	
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$(p \vee q) \vee r \Leftrightarrow p \vee (q \vee r)$	associative
$(p \wedge q) \wedge r \Leftrightarrow p \wedge (q \wedge r)$	
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$p \vee (q \wedge r) \Leftrightarrow (p \vee q) \wedge (p \vee r)$	distributive
$p \wedge (q \vee r) \Leftrightarrow (p \wedge q) \vee (p \wedge r)$	
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$\neg(p \vee q) \Leftrightarrow \neg p \wedge \neg q$	DeMorgan's
$\neg(p \wedge q) \Leftrightarrow \neg p \vee \neg q$	
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$p \vee \neg p \Leftrightarrow T$	inverse
$p \wedge \neg p \Leftrightarrow F$	
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$p \vee (p \wedge q) \Leftrightarrow p$	absorption
$p \wedge (p \vee q) \Leftrightarrow p$	
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$p \rightarrow q \Leftrightarrow \neg p \vee q$	implication
$p \leftrightarrow q \Leftrightarrow (p \rightarrow q) \wedge (q \rightarrow p)$	biconditional
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$\neg(\neg p) \Leftrightarrow p$	double negation

rules of inference

p		\Rightarrow	$p \vee q$	addition
$p \wedge q$		\Rightarrow	p	simplification
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p	q	\Rightarrow	$p \wedge q$	conjunction
$p \rightarrow q$	p	\Rightarrow	q	modus ponens
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$p \rightarrow q$	$\neg q$	\Rightarrow	$\neg p$	modus tollens
$p \rightarrow q$	$q \rightarrow r$	\Rightarrow	$p \rightarrow r$	hypothetical syllogism
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$p \vee q$	$\neg q$	\Rightarrow	p	disjunctive syllogism