

Truths of Propositional Logic

Tautologies. You can just assert that any tautology is true, and refer the reader to truth-tables.

Substitution of Equivalents. If one proposition is equivalent (by truth-tables) to another you may just replace one by the other.

Double Negation	$P \leftrightarrow \neg\neg P$
DeMorgan's Laws	$\neg(P \wedge Q) \leftrightarrow (\neg P \vee \neg Q)$ $\neg(P \vee Q) \leftrightarrow (\neg P \wedge \neg Q)$
Commutation	$(P \wedge Q) \leftrightarrow (Q \wedge P)$ $(P \vee Q) \leftrightarrow (Q \vee P)$
Associativity	$(P \wedge (Q \wedge R)) \leftrightarrow ((P \wedge Q) \wedge R)$ $(P \vee (Q \vee R)) \leftrightarrow ((P \vee Q) \vee R)$
Distribution	$(P \wedge (Q \vee R)) \leftrightarrow ((P \wedge Q) \vee (P \wedge R))$ $(P \vee (Q \wedge R)) \leftrightarrow ((P \vee Q) \wedge (P \vee R))$
Idempotence	$P \leftrightarrow (P \wedge P) \leftrightarrow (P \vee P)$
Implication	$(P \rightarrow Q) \leftrightarrow (\neg P \vee Q)$
Equivalence	$(P \leftrightarrow Q) \leftrightarrow ((P \rightarrow Q) \wedge (Q \rightarrow P)) \leftrightarrow ((P \wedge Q) \vee (\neg P \wedge \neg Q))$