

De Morgan's laws

$\neg(P \wedge Q)$ is equivalent to $\neg P \vee \neg Q$.

$\neg(P \vee Q)$ is equivalent to $\neg P \wedge \neg Q$.

Commutative laws

$P \wedge Q$ is equivalent to $Q \wedge P$.

$P \vee Q$ is equivalent to $Q \vee P$.

Associative laws

$P \wedge (Q \wedge R)$ is equivalent to $(P \wedge Q) \wedge R$.

$P \vee (Q \vee R)$ is equivalent to $(P \vee Q) \vee R$.

Idempotent laws

$P \wedge P$ is equivalent to P .

$P \vee P$ is equivalent to P .

Distributive laws

$P \wedge (Q \vee R)$ is equivalent to $(P \wedge Q) \vee (P \wedge R)$.

$P \vee (Q \wedge R)$ is equivalent to $(P \vee Q) \wedge (P \vee R)$.

Absorption laws

$P \vee (P \wedge Q)$ is equivalent to P .

$P \wedge (P \vee Q)$ is equivalent to P .

Contradiction laws

$P \wedge (\text{a contradiction})$ is a contradiction.

$P \vee (\text{a contradiction})$ is equivalent to P .

$\neg(\text{a contradiction})$ is a tautology.

Conditional laws

$P \rightarrow Q$ is equivalent to $\neg P \vee Q$.

$P \rightarrow Q$ is equivalent to $\neg(P \wedge \neg Q)$.

Contrapositive law

$P \rightarrow Q$ is equivalent to $\neg Q \rightarrow \neg P$.