

Velleman

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Chapter 1

Logic

1.0.1 Logic Factsheet

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

Double Negation law

$\neg\neg P$ is equivalent to P