

The laws of logic

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First and second Laws

One: $\neg(P \wedge Q) \Rightarrow \neg P \vee \neg Q$

$$\neg(P \vee Q) \Rightarrow \neg P \wedge \neg Q$$

Two: $P \vee Q \Rightarrow Q \vee P$

$$P \wedge Q \Rightarrow Q \wedge P$$

Third and fourth laws

Third: $P \wedge (Q \wedge R) \Rightarrow (P \wedge Q) \wedge R$

$P \vee (Q \vee R) \Rightarrow (P \vee Q) \vee R$

Fourth: $P \wedge P \Rightarrow P$

$P \vee P \Rightarrow P$

Fifth and sixth laws

Fifth: $\neg\neg P \Rightarrow P$

Sixth: $P \wedge (Q \vee R) \Rightarrow (P \wedge Q) \vee (P \wedge R)$

$P \vee (Q \wedge R) \Rightarrow (P \vee Q) \wedge (P \vee R)$

Seventh law

Seventh: $P \vee (P \wedge Q) \Rightarrow P$