Symbols: $\{\{0,1\}, +, -, \cdot\}$.

$1 \Rightarrow T \quad 0 \Rightarrow F$. e.g. $1+1 \Rightarrow T \vee T$.

$+ \Rightarrow \vee \quad \cdot \Rightarrow \wedge$

$- \Rightarrow \neg \Rightarrow \quad \bar{T} = 0 \quad \bar{0} = 1$

e.g. $(p \wedge q) \vee r = (x \cdot y) + z$.

$= f(x, y, z)$

Same truthfulness $\Rightarrow$

$f(0,0,0) = 0$

$f(0,1,0) = 0$

$f(1,0,0) = 0$

$f(0,0,1) = 0$

$p \to q \equiv \neg p \vee q$

$\equiv \bar{p} + q$.

De Morgan's law: $\overline{x+y} = \bar{x} \cdot \bar{y}$ $\quad \neg(p \vee q) = \neg p \wedge \neg q$

$\overline{x \cdot y} = \bar{x} + \bar{y}$. $\quad \neg(p \wedge q) = \neg p + \neg q$.

$p \wedge p \equiv p \Rightarrow x \cdot x = x \Rightarrow x^2 = x$

$p \vee p \subseteq p \Rightarrow x + x = x$

Distributive law: $x(y+z) = xy + xz$

$x + yz = (x+y)(x+z)$.

Def: $f: B^n \to B \quad B = \{0,1\}$.

A Boolean function in n-variables is a function:

$f: B^n \to B$.