



Logic Identities:

This is a complete list of logic identities. There may be other rules not listed here, but they can be derived from the ones given below. In the interest of minimizing how much one needs to learn, let's stick to this condensed set of rules. You need not memorize the names of the laws, but if there were one name to remember it'd be DeMorgan's Law.

Associative Laws

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

$$(P \wedge Q) \wedge R = P \wedge (Q \wedge R)$$

Double Negation

$$\neg \neg P = P$$

DeMorgan's Law's

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

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

Distributive Laws

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

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

Absorption Laws

$$P \wedge (P \vee Q) = P$$

$$P \vee (P \wedge Q) = P$$

Complement Laws

$$P \vee \neg P = T$$

$$P \wedge \neg P = F$$

Idempotent Laws

$$P \vee P = P$$

$$P \wedge P = P$$

Domination and Identity

$$T \vee P = T$$

$$F \vee P = P$$

$$T \wedge P = P$$

$$F \wedge P = F$$