$(p \land q) \land r \iff p \land (q \land r)$	$(p \lor q) \lor r \iff p \lor (q \lor r)$	Associative laws
$p \land (q \lor r) \iff (p \land q) \lor (p \land r)$	$p \lor (q \land r) \iff (p \lor q) \land (p \lor r)$	Distributive laws
$p \land p \iff p$	$p \lor p \iff p$	Idempotent laws
$p \land \textbf{True} \iff p$	$p \lor \textbf{False} \iff p$	Identity laws
$p \land \neg p \iff \textbf{False}$	$p \lor \neg p \iff \textbf{True}$	Negation laws
$p \land \textbf{False} \iff \textbf{False}$	$p \lor \textbf{True} \iff \textbf{True}$	Domination laws
$p \land (p \lor q) \iff p$	$p \lor (p \land q) \iff p$	Absorption laws
$\neg(p \land q) \iff (\neg p) \lor (\neg q)$	$\neg(p \lor q) \iff (\neg p) \land (\neg q)$	De Morgan's laws
	$\neg(\neg p) \iff p$	Involution law
	$(p \Rightarrow q) \iff (\neg p) \lor q$	Conditional equivalence
	$(p \Rightarrow q) \iff ((\neg q) \Rightarrow \neg p)$	Contrapositive

Table 2.1: Logic laws. These laws (excluding the last 2) are the laws of *Boolean algebra.*

Example 2.14. Prove that $(p \land q) \Rightarrow p$.

We need to show that the proposition is always **True**. We can use either truth tables (try it!), or logic laws: we use the laws to rewrite the proposition in equivalent forms (using $\iff$ by the rules in Table 2.1), until we reach **True**.

$$
\begin{array}{lll}
 & (p \land q) \Rightarrow p & \\
\iff & (\neg(q \land p)) \lor p & \text{(by conditional equivalence)} \\
\iff & ((\neg q) \lor (\neg p)) \lor p & \text{(by De Morgan)} \\
\iff & (\neg q) \lor ((\neg p) \lor p) & \text{(by associativity)} \\
\iff & (\neg q) \lor (p \lor \neg p) & \text{(by commutativity)} \\
\iff & (\neg q) \lor \textbf{True} & \text{(by negation laws)} \\
\iff & \textbf{True} & \text{(by domination laws)}
\end{array}
$$