Propositional Logic: The basic rules of natural deduction.

	introduction	elimination
conjunction rules $\wedge$	$\dfrac{a \quad b}{(a \wedge b)} \wedge i$	$\dfrac{(a \wedge b)}{a} \quad \dfrac{(a \wedge b)}{b} \wedge e$
disjunction rules $\vee$	$\dfrac{a}{(a \vee b)} \quad \dfrac{b}{(a \vee b)} \vee i$	$\dfrac{(a \vee b) \quad \boxed{\begin{array}{c} a \\ \vdots \\ c \end{array}} \quad \boxed{\begin{array}{c} b \\ \vdots \\ c \end{array}}}{c} \vee e$
implication rules $\rightarrow$	$\dfrac{\boxed{\begin{array}{c} a \\ \vdots \\ b \end{array}}}{(a \rightarrow b)} \rightarrow i$	$\dfrac{a \quad (a \rightarrow b)}{b} \rightarrow e$
negation rules $\neg$	$\dfrac{\boxed{\begin{array}{c} a \\ \vdots \\ \bot \end{array}}}{(\neg a)} \neg i$	$\dfrac{a \quad (\neg a)}{\bot} \neg e / \bot i$
contradiction rules $\bot$	$\dfrac{a \quad (\neg a)}{\bot} \bot i / \neg e$	$\dfrac{\bot}{a} \bot e$
double negation rules $\neg\neg$		$\dfrac{(\neg(\neg a))}{a} \neg\neg e$

Some useful derived rules

$$\frac{(a \to b) \quad (\neg b)}{(\neg a)}$$ MT (modus tollens)

$$\frac{a}{(\neg(\neg a))}$$ $\neg\neg i$

$$\frac{\boxed{\begin{array}{c}(\neg a) \\ \vdots \\ \bot\end{array}}}{a}$$ PBC (proof by contradiction).

$$\frac{}{(a \vee (\neg a))}$$ LEM (law of excluded middle)