		CHAPTER 3. PROOFS BY DEDUCTION		
Modus ponens:	$\begin{array}{c} \alpha \to \beta \\ \alpha \\ \hline \end{array}$	Modus tollens:	$\begin{array}{c} \alpha \to \beta \\ \neg \beta \\ \hline \end{array}$	
1	β	. 1	$\neg \alpha$	
\wedge introduction:	$egin{array}{c} lpha \ eta \end{array}$	\wedge elimination:	$\alpha \wedge \beta$	
	$\alpha \wedge \beta$		$\alpha \text{ [or } \beta]$	
\vee introduction:	$\begin{array}{ccc} \alpha & [\text{or } \beta] \\ \hline \end{array}$	\vee elimination: (Case analysis)	$\begin{array}{c} \alpha \vee \beta \\ \alpha \to \gamma \end{array}$	
	$\alpha \lor \beta$	(0 000 0 000)	$\beta \to \gamma$	
			γ	
\neg introduction:	<u>α</u>	\neg \neg elimination:	$\neg \neg \alpha$	
	$\neg \neg \alpha$		α	
\leftrightarrow introduction:	$\begin{array}{c} \alpha \to \beta \\ \beta \to \alpha \end{array}$	\leftrightarrow elimination:	$\overset{\alpha \leftrightarrow \beta}{$	
	$\alpha \leftrightarrow \beta$		$(\alpha \to \beta) \land (\beta \to \alpha)$	
Contradiction:	α $\neg \alpha$	Tautology: (when $\alpha \equiv \text{TRUE}$)		
		(when $\alpha = \text{TROE}$)	α	
	FALSE			

Figure 3.1: Rules of Inference

\rightarrow introduction:	$_{\beta }^{\left[\alpha \right] }$	Reduction to absurdity:	[lpha] FALSE
	$\alpha \to \beta$		$\neg \alpha$