

Sistemas de Deducción Natural

$$- IT \quad \frac{\vdash \alpha}{\vdash \alpha}$$

$$- I_{\wedge} \quad \frac{\vdash \alpha, \vdash \beta}{\vdash \alpha \wedge \beta}$$

$$- E_{\wedge} \quad \frac{\vdash \alpha \wedge \beta}{\vdash \alpha}, \quad \frac{\vdash \alpha \wedge \beta}{\vdash \beta}$$

Teorema de la Deducción Sintáctica

Modus Ponens

$$- I_{\rightarrow} \quad \frac{\vdash (\alpha \vdash \beta)}{\vdash \alpha \rightarrow \beta}$$

$$- E_{\rightarrow} \quad \frac{\vdash \alpha \rightarrow \beta, \vdash \alpha}{\vdash \beta}$$

$$- I_{\vee} \quad \frac{\vdash \alpha}{\vdash \alpha \vee \beta}, \quad \frac{\vdash \beta}{\vdash \alpha \vee \beta}$$

$$- E_{\vee} \quad \frac{\vdash \alpha \vee \beta, \vdash (\alpha \vdash \gamma), \vdash (\beta \vdash \gamma)}{\vdash \gamma}$$

Reducciones al absurdo

$$- I_{\neg} \quad \frac{\vdash (\alpha \vdash \beta \wedge \neg \beta)}{\vdash \neg \alpha}$$

$$- E_{\neg} \quad \frac{\vdash (\neg \alpha \vdash \beta \wedge \neg \beta)}{\vdash \alpha}$$

$$- E_{\neg \neg} \quad \frac{\vdash \neg \neg \alpha}{\vdash \alpha}$$

$$- CONTRA \quad \frac{\vdash \beta, \vdash \neg \beta}{\vdash \alpha}$$

$$- E_{\leftrightarrow} \quad \frac{\vdash \alpha \leftrightarrow \beta}{\vdash \alpha \rightarrow \beta}, \quad \frac{\vdash \alpha \leftrightarrow \beta}{\vdash \beta \rightarrow \alpha}$$

$$- I_{\leftrightarrow} \quad \frac{\vdash \alpha \rightarrow \beta, \vdash \beta \rightarrow \alpha}{\vdash \alpha \leftrightarrow \beta}$$