$$\frac{\overline{\alpha}^{\ 1}}{\alpha \to \alpha} \ \to I, 1$$

$$\frac{\alpha \quad \alpha \to \beta}{\beta} \ \to E$$

$$\frac{\dfrac{\alpha \quad \alpha \to (\neg\beta \to \gamma)}{\neg\beta \to \gamma} \to E \quad \dfrac{\alpha \quad \alpha \to \neg\beta}{\neg\beta} \to E}{\gamma} \ \to E$$

$$\frac{\dfrac{\dfrac{\overline{\cancel{\alpha}}}{\beta} \quad \alpha \to \beta}{\beta} \quad \neg\beta}{\dfrac{\bot}{\alpha \to \bot} \ \to I} \to E$$

$$\frac{\dfrac{\alpha \to \beta \quad \overline{\cancel{\neg\beta}}}{\neg\alpha}}{\neg\beta \to \neg\alpha}$$