

$$\mathbb{Y} \underset{\text{comm}}{\sim} \mathbb{A} \Leftrightarrow \mathbb{Y} = \underline{\mathbb{Y} \wedge \mathbb{A}} \vee \underline{\mathbb{Y} \wedge \bar{\mathbb{A}}}$$

$$\mathbb{Y} \sim \mathbb{A} \Leftrightarrow \mathbb{Y} \sim \bar{\mathbb{A}}$$

$$\mathbb{Y} \sim \mathbb{Y}$$

$$\mathbb{Y} \sim \bar{\mathbb{Y}}$$

$$\mathbb{Y} \sim \mathbb{A} \Rightarrow \mathbb{A} \sim \mathbb{Y}$$

$$\begin{aligned} \underline{\mathbb{A} \wedge \mathbb{Y}} \vee \underline{\mathbb{A} \wedge \bar{\mathbb{Y}}} &= \underline{\mathbb{A} \wedge \mathbb{Y}} \vee \underline{\mathbb{A} \wedge \overline{\mathbb{Y} \wedge \mathbb{A}}} \vee \underline{\mathbb{A} \wedge \bar{\mathbb{Y}}} = \underline{\mathbb{A} \wedge \mathbb{Y}} \vee \overbrace{\mathbb{A} \wedge \overline{\mathbb{Y} \wedge \mathbb{A}} \wedge \overline{\mathbb{Y} \vee \mathbb{A}}} \\ &= \underline{\mathbb{A} \wedge \mathbb{Y}} \vee \underbrace{\mathbb{A} \wedge \overline{\bar{\mathbb{Y}} \vee \mathbb{A}} \wedge \overline{\mathbb{Y} \wedge \mathbb{A}}}_{\text{Abs}} \underset{\mathbb{Y} \wedge \mathbb{A} \leqslant \mathbb{Y}}{\equiv} \underline{\mathbb{A} \wedge \mathbb{Y}} \vee \underline{\mathbb{A} \wedge \overline{\mathbb{Y} \wedge \mathbb{A}}} \underset{\text{oMod}}{\equiv} \mathbb{A} \end{aligned}$$

$$\mathbb{Y} \leqslant \mathbb{A} \Rightarrow \mathbb{Y} \sim \mathbb{A}$$

$$\underline{\mathbb{Y} \wedge \mathbb{A}} \vee \underline{\mathbb{Y} \wedge \bar{\mathbb{A}}} = \mathbb{Y} \vee \underline{\mathbb{Y} \wedge \bar{\mathbb{A}}} \underset{\text{Abs}}{\equiv} \mathbb{Y}$$

$$\mathbb{Y} \sim \mathbb{A} \Rightarrow \mathbb{Y} \wedge \mathbb{A} = \mathbb{Y} \wedge \underline{\mathbb{A} \vee \bar{\mathbb{A}}}$$

$$\mathbb{Y} \wedge \underline{\mathbb{A} \vee \bar{\mathbb{A}}} \underset{\text{distr}}{\geqslant} \underline{\mathbb{Y} \wedge \mathbb{A}} \vee \underline{\mathbb{Y} \wedge \bar{\mathbb{A}}} = \underline{\mathbb{Y} \wedge \mathbb{A}} \vee o = \mathbb{Y} \wedge \mathbb{A}$$

$$\mathbb{Y} \wedge \underline{\mathbb{A} \vee \bar{\mathbb{A}}} \wedge \overline{\mathbb{Y} \wedge \mathbb{A}} = \mathbb{Y} \wedge \overbrace{\underline{\mathbb{A} \wedge \bar{\mathbb{A}}} \vee \underline{\mathbb{Y} \wedge \mathbb{A}}} \underset{\mathbb{Y} \sim \mathbb{A}}{\equiv} \mathbb{Y} \wedge \bar{\mathbb{A}} = o$$

$$\underset{\text{oMod}}{\Rightarrow} \mathbb{Y} \wedge \underline{\mathbb{A} \vee \bar{\mathbb{A}}} = \mathbb{Y} \wedge \mathbb{A}$$

$$\underline{\underline{y}} \sim \underline{\underline{z}} \sim \underline{\underline{w}} \Rightarrow \left\{ \begin{array}{l} \underline{\underline{y}} \vee \underline{\underline{z}} \wedge \underline{\underline{w}} = \underline{\underline{y}} \wedge \underline{\underline{z}} \vee \underline{\underline{w}} \wedge \underline{\underline{z}} \\ \underline{\underline{z}} \vee \underline{\underline{y}} \wedge \underline{\underline{w}} = \underline{\underline{z}} \wedge \underline{\underline{y}} \vee \underline{\underline{w}} \wedge \underline{\underline{y}} \end{array} \right.$$

$$\begin{aligned}
& \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} \stackrel{\text{semi}}{\geqslant} \underbrace{\mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} \vee \underbrace{\mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} \\
& \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \underbrace{\mathbb{Y} \wedge \mathbb{Y} \vee \mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} = \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} \wedge \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \\
& \underset{\mathbb{Y} \sim \mathbb{Y}}{=} \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \underbrace{\mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} \wedge \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} = \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} \wedge \underbrace{\mathbb{Y} \wedge \mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} = \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} \wedge \mathbb{Y} \wedge \mathbb{Y} \\
& = \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} = o \wedge \mathbb{Y} = o \Rightarrow \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} = \underbrace{\mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} \vee \underbrace{\mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} \\
& \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} \stackrel{\text{semi}}{\geqslant} \underbrace{\mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} \vee \underbrace{\mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} \\
& \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} \wedge \underbrace{\mathbb{Y} \wedge \mathbb{Y} \vee \mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} = \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} \wedge \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} = \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} \wedge \mathbb{Y} \wedge \mathbb{Y} \\
& \underset{\mathbb{Y} \sim \mathbb{Y}}{=} \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} \wedge \underbrace{\mathbb{Y} \vee \mathbb{Y}}_{\text{distr}} = \mathbb{Y} \wedge \mathbb{Y} \wedge \mathbb{Y} \wedge \mathbb{Y} = \underbrace{\mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} \wedge \underbrace{\mathbb{Y} \wedge \mathbb{Y}}_{\text{distr}} \wedge \mathbb{Y} = o \wedge \mathbb{Y} = o
\end{aligned}$$

$$\mathbb{Y} \sim \mathbb{A} \Rightarrow \mathbb{Y} \curvearrowleft \mathbb{A} = \bar{\mathbb{Y}} \vee \mathbb{A}$$

$$\begin{aligned} \Psi \sim * &= \underbrace{\Psi \wedge *} \vee \underbrace{\Psi \wedge \bar{*}} \vee \overbrace{\Psi \wedge (\bar{*} \vee \bar{\Psi})}^{\Psi \sim *} = \underbrace{\Psi \wedge *} \vee \underbrace{\Psi \wedge \bar{*}} \vee \underbrace{\Psi \wedge *} \\ &= \underbrace{*\wedge \Psi} \vee \underbrace{*\wedge \bar{\Psi}} \vee \underbrace{\bar{\Psi} \wedge *} \underset{\Psi \sim \bar{\Psi}}{=} * \vee \underbrace{\bar{\Psi} \wedge *} = \overbrace{\bar{\Psi} \wedge (\Psi \vee *)}^{*\sim \bar{\Psi}} = \overbrace{\bar{\Psi} \wedge \Psi}^{*\sim \Psi} = * \vee \bar{\Psi} \end{aligned}$$