

## t7\_orders\_1

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $r7\_relat\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_relat\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r6\_relat\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(r7\_relat\_2 X0 X1) \Leftrightarrow (\forall X2. \\ \forall X3. \neg(X2 \in X1) \wedge ((X3 \in X1) \wedge ((\neg k4\_tarski X2 X3 \in X0) \wedge (\neg k4\_tarski \\ X3 X2 \in X0)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(r6\_relat\_2 X0 X1) \Leftrightarrow (\forall X2. \\ \forall X3. \neg(X2 \in X1) \wedge ((X3 \in X1) \wedge ((X2 \neq X3) \wedge ((\neg k4\_tarski X2 X3 \in X0) \wedge \\ (\neg k4\_tarski X3 X2 \in X0))))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(r1\_relat\_2 X0 X1) \Leftrightarrow (\forall X2. \\ (X2 \in X1) \Rightarrow (k4\_tarski X2 X2 \in X0))) \end{aligned} \tag{3}$$

### Theorem 1

$$\begin{aligned} \forall X0. \forall X1.(v1\_relat\_1 X1) \Rightarrow ((r7\_relat\_2 X1 X0) \Leftrightarrow (( \\ r1\_relat\_2 X1 X0) \wedge (r6\_relat\_2 X1 X0))) \end{aligned}$$