

## t55\_orders\_1

(TMM1VKnoERepM5DZhR6AUxHUzcDZdRZUDpm)

October 27, 2020

Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $r7\_orders\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v6\_relat\_2 : \iota \Rightarrow o$  be given. Let  $r9\_orders\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_relat\_1 : \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(v1\_relat\_1 X0) \Rightarrow ((v6\_relat\_2 X0) \Leftrightarrow (\forall X1.\forall X2. \\ & \neg(X1 \in k1\_relat\_1 X0) \wedge ((X2 \in k1\_relat\_1 X0) \wedge ((X1 \neq X2) \wedge ((\neg k4\_tarski \\ & X1 X2 \in X0) \wedge (\neg k4\_tarski X2 X1 \in X0)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(r9\_orders\_1 X0 X1) \Leftrightarrow ( \\ & (X1 \in k1\_relat\_1 X0) \wedge (\forall X2.(X2 \in k1\_relat\_1 X0) \Rightarrow ((X2 = X1) \vee \\ & (k4\_tarski X1 X2 \in X0)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(r7\_orders\_1 X0 X1) \Leftrightarrow ( \\ & (X1 \in k1\_relat\_1 X0) \wedge (\forall X2.\neg(X2 \in k1\_relat\_1 X0) \wedge ((X2 \neq X1) \wedge \\ & (k4\_tarski X2 X1 \in X0)))))) \end{aligned} \quad (3)$$

### Theorem 1

$$\begin{aligned} & \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.((r7\_orders\_1 X0 X1) \wedge \\ & (v6\_relat\_2 X0)) \Rightarrow (r9\_orders\_1 X0 X1)) \end{aligned}$$