

# t1\_sublemma (TMNr- niCx3cdhJr2VYqDdDn7HmANmY4iG58h)

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(( \\ v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow ((r1\_tarski (k9\_xtuple\_0 X0) \\ (k9\_xtuple\_0 X1)) \Rightarrow (k1\_funct\_4 X0 X1 = X1))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(( \\ v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge \\ (v1\_funct\_1 X2)) \Rightarrow (k1\_funct\_4 (k1\_funct\_4 X0 X1) X2 = k1\_funct\_4 \\ X0 (k1\_funct\_4 X1 X2)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(( \\ v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow ((r1\_tarski (k9\_xtuple\_0 X0) \\ (k9\_xtuple\_0 (k1\_funct\_4 X0 X1))) \wedge (r1\_tarski (k9\_xtuple\_0 X1) \\ (k9\_xtuple\_0 (k1\_funct\_4 X0 X1)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1.(((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \wedge (( \\ v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1))) \Rightarrow ((v1\_relat\_1 (k1\_funct\_4 X0 \\ X1)) \wedge (v1\_funct\_1 (k1\_funct\_4 X0 X1))) \end{aligned} \quad (4)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(( \\ v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge \\ (v1\_funct\_1 X2)) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge (v1\_funct\_1 X3)) \Rightarrow \\ (\forall X4.((v1\_relat\_1 X4) \wedge (v1\_funct\_1 X4)) \Rightarrow (((r1\_tarski \\ (k9\_xtuple\_0 X3) (k9\_xtuple\_0 X2)) \wedge (r1\_tarski (k9\_xtuple\_0 X4) \\ (k9\_xtuple\_0 X2))) \Rightarrow (k1\_funct\_4 (k1\_funct\_4 X0 X1) X2 = k1\_funct\_4 \\ (k1\_funct\_4 (k1\_funct\_4 X0 X3) (k1\_funct\_4 X1 X4)) X2)))))) \end{aligned}$$