

t15\_qc\_lang3  
(TMNKiTKY5oNq8WfCJvMht47Q3sXzpbTYSoe)

October 27, 2020

Let  $m1\_qc\_lang1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $v2\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k24\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k12\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k11\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v4\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k19\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k20\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k18\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k9\_qc\_lang1 \\ X0)) \Rightarrow ((v4\_qc\_lang1 X1 X0) \Rightarrow (k24\_qc\_lang1 X0 X1 = k4\_subset\_1 (k3\_qc\_lang1 \\ X0) (k24\_qc\_lang1 X0 (k19\_qc\_lang1 X0 X1)) (k24\_qc\_lang1 X0 (k20\_qc\_lang1 \\ X0 X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k9\_qc\_lang1 \\ X0)) \Rightarrow ((v3\_qc\_lang1 X1 X0) \Rightarrow (k24\_qc\_lang1 X0 X1 = k24\_qc\_lang1 X0 \\ (k18\_qc\_lang1 X0 X1)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k9\_qc\_lang1 \\ X0)) \Rightarrow ((v2\_qc\_lang2 X1 X0) \Rightarrow ((v3\_qc\_lang1 X1 X0) \wedge ((v4\_qc\_lang1 \\ (k18\_qc\_lang1 X0 X1) X0) \wedge (v3\_qc\_lang1 (k20\_qc\_lang1 X0 (k18\_qc\_lang1 \\ X0 X1)) X0)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1 X0) \wedge (m1\_subset\_1 X1 (k9\_qc\_lang1 X0))) \Rightarrow (m1\_subset\_1 (k20\_qc\_lang1 X0 X1) (k9\_qc\_lang1 X0)) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1 X0) \wedge (m1\_subset\_1 X1 (k9\_qc\_lang1 X0))) \Rightarrow (m1\_subset\_1 (k18\_qc\_lang1 X0 X1) (k9\_qc\_lang1 X0)) \tag{5}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1\ X0)) \Rightarrow (k12\_qc\_lang2\ X0\ X1 = k19\_qc\_lang1\ X0\ (k18\_qc\_lang1\ X0\ X1))) \quad (6)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1\ X0)) \Rightarrow (k11\_qc\_lang2\ X0\ X1 = k18\_qc\_lang1\ X0\ (k20\_qc\_lang1\ X0\ (k18\_qc\_lang1\ X0\ X1)))) \quad (7)$$

**Theorem 1**

$$\forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1\ X0)) \Rightarrow ((v2\_qc\_lang2\ X1\ X0) \Rightarrow (k24\_qc\_lang1\ X0\ X1 = k4\_subset\_1\ (k3\_qc\_lang1\ X0)\ (k24\_qc\_lang1\ X0\ (k12\_qc\_lang2\ X0\ X1))\ (k24\_qc\_lang1\ X0\ (k11\_qc\_lang2\ X0\ X1)))))$$