

t18\_qc\_lang3  
(TMSdw1UMLWXUNTtQuSNC83ozbkp4KRgVfxJ)

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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  $k24\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $k13\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k14\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k19\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k20\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k9\_qc\_lang1 \\ & X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k9\_qc\_lang1 X0)) \Rightarrow ((k13\_qc\_lang2 \\ & X0 (k4\_qc\_lang2 X0 X1 X2) = X1) \wedge ((k14\_qc\_lang2 X0 (k4\_qc\_lang2 X0 \\ & X1 X2) = X2) \wedge ((k19\_qc\_lang1 X0 (k4\_qc\_lang2 X0 X1 X2) = k2\_qc\_lang2 \\ & X0 X1 X2) \wedge (k20\_qc\_lang1 X0 (k4\_qc\_lang2 X0 X1 X2) = k2\_qc\_lang2 X0 \\ & X2 X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k9\_qc\_lang1 \\ & X0)) \Rightarrow ((v3\_qc\_lang2 X1 X0) \Rightarrow (k24\_qc\_lang1 X0 X1 = k4\_subset\_1 (k3\_qc\_lang1 \\ & X0) (k24\_qc\_lang1 X0 (k13\_qc\_lang2 X0 X1)) (k24\_qc\_lang1 X0 (k14\_qc\_lang2 \\ & X0 X1)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1\_qc\_lang1 X0) \wedge ((m1\_subset\_1 \\ & X1 (k9\_qc\_lang1 X0)) \wedge (m1\_subset\_1 X2 (k9\_qc\_lang1 X0)))) \Rightarrow (m1\_subset\_1 \\ & (k4\_qc\_lang2 X0 X1 X2) (k9\_qc\_lang1 X0)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k9\_qc\_lang1 \\ & X0)) \Rightarrow ((v3\_qc\_lang2 X1 X0) \Leftrightarrow (\exists X2.(m1\_subset\_1 X2 (k9\_qc\_lang1 \\ & X0)) \wedge (\exists X3.(m1\_subset\_1 X3 (k9\_qc\_lang1 X0)) \wedge (X1 = k4\_qc\_lang2 \\ & X0 X2 X3)))))) \end{aligned} \tag{4}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1 \\ & X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (k9\_qc\_lang1\ X0)) \Rightarrow (k24\_qc\_lang1 \\ & X0\ (k4\_qc\_lang2\ X0\ X1\ X2) = k4\_subset\_1\ (k3\_qc\_lang1\ X0)\ (k24\_qc\_lang1 \\ & X0\ X1)\ (k24\_qc\_lang1\ X0\ X2)))) \end{aligned}$$