

## t5\_qc\_lang4

(TMTxGXz3sMFmmqUxecwubTYzQ3xzdYnTkgA)

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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  $k10\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_qc\_lang4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_trees\_1 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k6\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v3\_trees\_2 : \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_trees\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_trees\_9 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_qc\_lang4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_trees\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. ((\neg v1\_xboole\_0 X0) \wedge (v1\_trees\_1 X0)) \Rightarrow ((k1\_xboole\_0 \in X0) \wedge (k6\_finseq\_1 k5\_numbers \in X0)) \quad (1)$$

Assume the following.

$$\forall X0. ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v3\_trees\_2 X0))) \Rightarrow ((\neg v1\_xboole\_0 (k9\_xtuple\_0 X0)) \wedge (v1\_trees\_1 (k9\_xtuple\_0 X0))) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. ((m1\_qc\_lang1 X0) \wedge (m1\_subset\_1 X1 (k9\_qc\_lang1 X0))) \Rightarrow ((v1\_relat\_1 (k2\_qc\_lang4 X0 X1)) \wedge ((v5\_relat\_1 (k2\_qc\_lang4 X0 X1) (k9\_qc\_lang1 X0)) \wedge ((v1\_funct\_1 (k2\_qc\_lang4 X0 X1)) \wedge ((v1\_finset\_1 (k2\_qc\_lang4 X0 X1)) \wedge (v3\_trees\_2 (k2\_qc\_lang4 X0 X1)))))) \quad (3)$$

Assume the following.

$$\forall X0. ((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1. (X1 = k10\_xtuple\_0 X0) \Leftrightarrow (\forall X2. (X2 \in X1) \Leftrightarrow (\exists X3. (X3 \in k9\_xtuple\_0 X0) \wedge (X2 = k1\_funct\_1 X0 X3)))) \quad (4)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1 \\
& \quad X0)) \Rightarrow (\forall X2.((v1\_relat\_1\ X2) \wedge ((v5\_relat\_1\ X2\ (k9\_qc\_lang1 \\
& \quad X0)) \wedge ((v1\_funct\_1\ X2) \wedge ((v1\_finset\_1\ X2) \wedge (v3\_trees\_2\ X2)))))) \Rightarrow \\
& ((X2 = k2\_qc\_lang4\ X0\ X1) \Leftrightarrow ((k1\_funct\_1\ X2\ k1\_xboole\_0 = X1) \wedge (\forall X3. \\
& \quad (m1\_trees\_1\ X3\ (k9\_xtuple\_0\ X2)) \Rightarrow (k2\_trees\_9\ X2\ X3 = k1\_qc\_lang4 \\
& \quad X0\ (k3\_trees\_2\ (k9\_qc\_lang1\ X0)\ X2\ X3))))))
\end{aligned} \tag{5}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1 \\
& \quad X0)) \Rightarrow (X1 \in k10\_xtuple\_0\ (k2\_qc\_lang4\ X0\ X1)))
\end{aligned}$$