# t15_substut2 (TMErndAzXnzcHvnKKrpfNcDqyQPhKDzCdR7)

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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 $k5\_numbers : \iota$ be given. Let $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6\_qc\_lang1 : \iota \Rightarrow \iota$ be given. Let $k8\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3\_qc\_lang1 : \iota \Rightarrow \iota$ be given. Let $v3\_card\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2\_qc\_lang1 : \iota \Rightarrow \iota$ be given. Let $k1\_substut1 : \iota \Rightarrow \iota$ be given. Let $k7\_cqc\_sim1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_cqc\_lang : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k39\_substut1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_substut2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k17\_substut1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9\_qc\_lang1 : \iota \Rightarrow \iota$ be given. Let $k10\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3\_substut1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6\_numbers : \iota$ be given. Let $v1\_xboole\_0 : \iota \Rightarrow o$ be given. Let $k1\_zfmisc\_1 : \iota \Rightarrow \iota$ be given. Let $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3\_cqc\_lang : \iota \Rightarrow \iota$ be given. Let $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k1\_substut1\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ k5\_numbers) \Rightarrow (\forall X3.(m2\_subset\_1\ X3\ (k6\_qc\_lang1\ X0)\ (k8\_qc\_lang1\ X0\ X2)) \Rightarrow (\forall X4.((v3\_card\_1\ X4\ X2) \wedge (m2\_finseq\_1\ X4\ (k2\_qc\_lang1\ X0))) \Rightarrow (k17\_substut1\ X0\ X3\ X4\ X1 = k1\_domain\_1\ (k9\_qc\_lang1\ X0)\ (k1\_substut1\ X0)\ (k10\_qc\_lang1\ X0\ X3\ X4)\ X1)))))) \tag{1}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ k5\_numbers) \Rightarrow (\forall X2.(m2\_subset\_1\ X2\ (k6\_qc\_lang1\ X0)\ (k8\_qc\_lang1\ X0\ X1)) \Rightarrow (\forall X3.((v5\_relat\_1\ X3\ (k3\_qc\_lang1\ X0)) \wedge ((v3\_card\_1\ X3\ X1) \wedge (m2\_finseq\_1\ X3\ (k2\_qc\_lang1\ X0)))) \Rightarrow (\forall X4.(m1\_subset\_1\ X4\ (k1\_substut1\ X0)) \Rightarrow (k39\_substut1\ X0\ (k4\_sublemma\ X1\ X0\ X2\ X3\ X4) = k10\_qc\_lang1\ X0\ X2\ (k3\_substut1\ X0\ X3\ X4)))))) \tag{2}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ k5\_numbers)\Rightarrow(\forall X2.((v5\_relat\_1\ X2\ (k3\_qc\_lang1\ X0))\wedge((v3\_card\_1\ X2\ X1)\wedge(m2\_finseq\_1\ X2\ (k2\_qc\_lang1\ X0))))\Rightarrow(\forall X3.(m2\_subset\_1\ X3\ (k6\_qc\_lang1\ X0)\ (k8\_qc\_lang1\ X0\ X1))\Rightarrow(k7\_cqc\_sim1\ X0\ (k4\_cqc\_lang\ X1\ X0\ X3\ X2) = k6\_numbers))))) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0\ X0)\wedge((\neg v1\_xboole\_0\ X1)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0))))\Rightarrow(\forall X2.(m2\_subset\_1\ X2\ X0\ X1)\Leftrightarrow(m1\_subset\_1\ X2\ X1)) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.(m2\_finseq\_1\ X1\ X0)\Leftrightarrow(m1\_finseq\_1\ X1\ X0) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((m1\_subset\_1\ X0\ k5\_numbers)\wedge((m1\_qc\_lang1\ X1)\wedge((m1\_subset\_1\ X2\ (k8\_qc\_lang1\ X1\ X0))\wedge(((v5\_relat\_1\ X3\ (k3\_qc\_lang1\ X1))\wedge((v3\_card\_1\ X3\ X0)\wedge(m1\_finseq\_1\ X3\ (k2\_qc\_lang1\ X1))))\wedge(m1\_subset\_1\ X4\ (k1\_substut1\ X1))))))\Rightarrow(k4\_sublemma\ X0\ X1\ X2\ X3\ X4 = k17\_substut1\ X1\ X2\ X3\ X4) \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1\_subset\_1\ X0\ k5\_numbers)\wedge((m1\_qc\_lang1\ X1)\wedge((m1\_subset\_1\ X2\ (k8\_qc\_lang1\ X1\ X0))\wedge((v5\_relat\_1\ X3\ (k3\_qc\_lang1\ X1))\wedge((v3\_card\_1\ X3\ X0)\wedge(m1\_finseq\_1\ X3\ (k2\_qc\_lang1\ X1))))))\Rightarrow(k4\_cqc\_lang\ X0\ X1\ X2\ X3 = k10\_qc\_lang1\ X1\ X2\ X3) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_qc\_lang1\ X0)\wedge((m1\_subset\_1\ X1\ (k3\_cqc\_lang\ X0))\wedge(m1\_subset\_1\ X2\ (k1\_substut1\ X0))))\Rightarrow(k2\_substut2\ X0\ X1\ X2 = k4\_tarski\ X1\ X2) \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0\ X0)\wedge((\neg v1\_xboole\_0\ X1)\wedge((m1\_subset\_1\ X2\ X0)\wedge(m1\_subset\_1\ X3\ X1))))\Rightarrow(k1\_domain\_1\ X0\ X1\ X2\ X3 = k4\_tarski\ X2\ X3) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1\ X0\ k5\_numbers)\wedge(m1\_qc\_lang1\ X1))\Rightarrow(\neg v1\_xboole\_0\ (k8\_qc\_lang1\ X1\ X0)) \tag{10}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\neg v1\_xboole\_0\ (k3\_cqc\_lang\ X0)) \tag{11}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\neg v1\_xboole\_0\ (k1\_substut1\ X0)) \tag{12}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1\_qc\_lang1\ X0)\wedge ((m1\_subset\_1\ X1\ k5\_numbers)\wedge(((v5\_relat\_1\ X2\ (k3\_qc\_lang1\ X0))\wedge ((v3\_card\_1\ X2\ X1)\wedge(m1\_finseq\_1\ X2\ (k2\_qc\_lang1\ X0))))\wedge(m1\_subset\_1\ X3\ (k1\_substut1\ X0)))))\Rightarrow((v5\_relat\_1\ (k3\_substut1\ X0\ X2\ X3)\ (k3\_qc\_lang1\ X0))\wedge(v3\_card\_1\ (k3\_substut1\ X0\ X2\ X3)\ X1)) \tag{13}$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0\ X0)\wedge((\neg v1\_xboole\_0\ X1)\wedge (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0))))\Rightarrow(\forall X2.(m2\_subset\_1\ X2\ X0\ X1)\Rightarrow(m1\_subset\_1\ X2\ X0)) \tag{14}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\neg v1\_xboole\_0\ (k9\_qc\_lang1\ X0)) \tag{15}$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1\ X0)\wedge(m1\_subset\_1\ X1\ k5\_numbers))\Rightarrow (m1\_subset\_1\ (k8\_qc\_lang1\ X0\ X1)\ (k1\_zfmisc\_1\ (k6\_qc\_lang1\ X0))) \tag{16}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1\_subset\_1\ X0\ k5\_numbers)\wedge((m1\_qc\_lang1\ X1)\wedge((m1\_subset\_1\ X2\ (k8\_qc\_lang1\ X1\ X0))\wedge((v5\_relat\_1\ X3\ (k3\_qc\_lang1\ X1))\wedge((v3\_card\_1\ X3\ X0)\wedge (m1\_finseq\_1\ X3\ (k2\_qc\_lang1\ X1))))))\Rightarrow(m2\_subset\_1\ (k4\_cqc\_lang\ X0\ X1\ X2\ X3)\ (k9\_qc\_lang1\ X1)\ (k3\_cqc\_lang\ X1)) \tag{17}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_qc\_lang1\ X0)\wedge((m1\_finseq\_1\ X1\ (k2\_qc\_lang1\ X0))\wedge(m1\_subset\_1\ X2\ (k1\_substut1\ X0))))\Rightarrow(m2\_finseq\_1\ (k3\_substut1\ X0\ X1\ X2)\ (k2\_qc\_lang1\ X0)) \tag{18}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(m1\_subset\_1\ (k3\_cqc\_lang\ X0)\ (k1\_zfmisc\_1\ (k9\_qc\_lang1\ X0))) \tag{19}$$

Assume the following.

$$\forall X0.(v1\_xboole\_0\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0))\Rightarrow(v1\_xboole\_0\ X1)) \tag{20}$$

**Theorem 1**

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ k5\_numbers)\Rightarrow (\forall X2.(m2\_subset\_1\ X2\ (k6\_qc\_lang1\ X0)\ (k8\_qc\_lang1\ X0\ X1))\Rightarrow (\forall X3.((v5\_relat\_1\ X3\ (k3\_qc\_lang1\ X0))\wedge((v3\_card\_1\ X3\ X1)\wedge(m2\_finseq\_1\ X3\ (k2\_qc\_lang1\ X0))))\Rightarrow(\forall X4.(m1\_subset\_1\ X4\ (k1\_substut1\ X0))\Rightarrow(k7\_cqc\_sim1\ X0\ (k4\_cqc\_lang\ X1\ X0\ X2\ X3) = k7\_cqc\_sim1\ X0\ (k39\_substut1\ X0\ (k2\_substut2\ X0\ (k4\_cqc\_lang\ X1\ X0\ X2\ X3)\ X4)))))))$$