t31_tsp_2 (TMFRv7StskgFMVo8FbPgvS3P1N3FxdjsSCY)

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Let $v2\_struct\_0 : \iota \Rightarrow o$ be given. Let $v2\_pre\_topc : \iota \Rightarrow o$ be given. Let $l1\_pre\_topc : \iota \Rightarrow o$ be given. Let $v2\_tsp\_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1\_zfmisc\_1 : \iota \Rightarrow \iota$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $k7\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_tsp\_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3\_tex\_4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1\_funct\_1 : \iota \Rightarrow o$ be given. Let $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v5\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge (l1\_pre\_topc\ X0)) \Rightarrow (\forall X1.\ (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \Rightarrow (\forall X2.\ (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \Rightarrow (k3\_tex\_4\ X0\ (k4\_subset\_1\ (u1\_struct\_0\ X0)\ X1\ X2) = k4\_subset\_1\ (u1\_struct\_0\ X0)\ (k3\_tex\_4\ X0\ X1)\ (k3\_tex\_4\ X0\ X2)))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.k3\_xboole\_0\ X0\ (k2\_xboole\_0\ X1\ X2) = k2\_xboole\_0\ (k3\_xboole\_0\ X0\ X1)\ (k3\_xboole\_0\ X0\ X2) \tag{2}$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0) \Rightarrow (\forall X1.(m1\_pre\_topc\ X1\ X0) \Rightarrow (m1\_subset\_1\ (u1\_struct\_0\ X1)\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0)) \Rightarrow (k9\_subset\_1\ X0\ X1\ X2 = k3\_xboole\_0\ X1\ X2) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0)) \wedge (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0))) \Rightarrow (k4\_subset\_1\ X0\ X1\ X2 = k2\_xboole\_0\ X1\ X2) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ X0\ X1)))\Rightarrow(m1\_subset\_1\ (k7\_relset\_1\ X0\ X1\ X2\ X3)\ (k1\_zfmisc\_1\ X1)) \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0))\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0)))\Rightarrow(m1\_subset\_1\ (k4\_subset\_1\ X0\ X1\ X2)\ (k1\_zfmisc\_1\ X0)) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge(l1\_pre\_topc\ X0))\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k3\_tex\_4\ X0\ X1)\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0)))\wedge((\neg v2\_struct\_0\ X1)\wedge((v2\_tsp\_2\ X1\ X0)\wedge(m1\_pre\_topc\ X1\ X0))))\Rightarrow((v1\_funct\_1\ (k1\_tsp\_2\ X0\ X1))\wedge((v1\_funct\_2\ (k1\_tsp\_2\ X0\ X1)\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1))\wedge((v5\_pre\_topc\ (k1\_tsp\_2\ X0\ X1)\ X0\ X1)\wedge(m1\_subset\_1\ (k1\_tsp\_2\ X0\ X1)\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1))))))) \tag{9}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0)))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge((v2\_tsp\_2\ X1\ X0)\wedge(m1\_pre\_topc\ X1\ X0)))\Rightarrow(\forall X2.((v1\_funct\_1\ X2)\wedge((v1\_funct\_2\ X2\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1))\wedge((v5\_pre\_topc\ X2\ X0\ X1)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1))))))))\Rightarrow((X2 = k1\_tsp\_2\ X0\ X1)\Leftrightarrow(\forall X3.(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow((X3 = u1\_struct\_0\ X1)\Rightarrow(\forall X4.(m1\_subset\_1\ X4\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(k9\_subset\_1\ (u1\_struct\_0\ X0)\ X3\ (k3\_tex\_4\ X0\ X4) = k7\_relset\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1)\ X2\ X4))))))) \tag{10}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0))\Rightarrow(k9\_subset\_1\ X0\ X1\ X2 = k9\_subset\_1\ X0\ X2\ X1) \tag{11}$$

Assume the following.

$$\forall X0.\forall X1.k3\_xboole\_0\ X0\ X1 = k3\_xboole\_0\ X1\ X0 \tag{12}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0)))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge((v2\_tsp\_2\ X1\ X0)\wedge(m1\_pre\_topc\ X1\ X0)))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(k7\_relset\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1)\ (k1\_tsp\_2\ X0\ X1)\ (k4\_subset\_1\ (u1\_struct\_0\ X0)\ X2\ X3) = k4\_subset\_1\ (u1\_struct\_0\ X1)\ (k7\_relset\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1)\ (k1\_tsp\_2\ X0\ X1)\ X2)\ (k7\_relset\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1)\ (k1\_tsp\_2\ X0\ X1)\ X3)))))$$