

## t25\_topreal7

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Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $r1\_t\_0topsp : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_borsuk\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_pcomps\_1 : \iota \Rightarrow \iota$  be given. Let  $k14\_euclid : \iota \Rightarrow \iota$  be given. Let  $k2\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_ordinal1 : \iota$  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  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_tops\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $l1\_metric\_1 : \iota \Rightarrow o$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_metric\_1 : \iota \Rightarrow o$  be given. Let  $v6\_metric\_1 : \iota \Rightarrow o$  be given. Let  $v7\_metric\_1 : \iota \Rightarrow o$  be given. Let  $v8\_metric\_1 : \iota \Rightarrow o$  be given. Let  $v9\_metric\_1 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2. (m2\_subset\_1 \\ & X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1)) \end{aligned} \quad (1)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (2)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_subset\_1 X0 k5\_numbers) \Rightarrow (\forall X1.(m1\_subset\_1 \\
& X1 k5\_numbers) \Rightarrow (\exists X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 \\
& (u1\_struct\_0 (k2\_borsuk\_1 (k3\_pcomps\_1 (k14\_euclid X0)) (k3\_pcomps\_1 \\
& (k14\_euclid X1)))) (u1\_struct\_0 (k3\_pcomps\_1 (k14\_euclid (k2\_nat\_1 \\
& X0 X1)))))) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& (k2\_borsuk\_1 (k3\_pcomps\_1 (k14\_euclid X0)) (k3\_pcomps\_1 (k14\_euclid \\
& X1)))) (u1\_struct\_0 (k3\_pcomps\_1 (k14\_euclid (k2\_nat\_1 X0 X1))))))))) \wedge \\
& ((v3\_tops\_2 X2 (k2\_borsuk\_1 (k3\_pcomps\_1 (k14\_euclid X0)) (k3\_pcomps\_1 \\
& (k14\_euclid X1))) (k3\_pcomps\_1 (k14\_euclid (k2\_nat\_1 X0 X1)))) \wedge \\
& (\forall X3.((v1\_relat\_1 X3) \wedge ((v1\_funct\_1 X3) \wedge (v1\_finseq\_1 \\
& X3))) \Rightarrow (\forall X4.((v1\_relat\_1 X4) \wedge ((v1\_funct\_1 X4) \wedge (v1\_finseq\_1 \\
& X4))) \Rightarrow ((k4\_tarski X3 X4 \in k1\_relset\_1 (u1\_struct\_0 (k2\_borsuk\_1 \\
& (k3\_pcomps\_1 (k14\_euclid X0)) (k3\_pcomps\_1 (k14\_euclid X1)))) \\
& X2) \Rightarrow (k1\_binop\_1 X2 X3 X4 = k7\_finseq\_1 X3 X4)))))))))
\end{aligned} \tag{3}$$

Assume the following.

$$(\neg v1\_xboole\_0 k4\_ordinal1) \wedge (v3\_ordinal1 k4\_ordinal1) \tag{4}$$

Assume the following.

$$\forall X0.(l1\_metric\_1 X0) \Rightarrow ((v1\_pre\_topc (k3\_pcomps\_1 X0)) \wedge (v2\_pre\_topc (k3\_pcomps\_1 X0))) \tag{5}$$

Assume the following.

$$m1\_subset\_1 k5\_numbers (k1\_zfmisc\_1 k1\_numbers) \tag{6}$$

Assume the following.

$$\forall X0.(l1\_metric\_1 X0) \Rightarrow (l1\_pre\_topc (k3\_pcomps\_1 X0)) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 k5\_numbers) \wedge (v7\_ordinal1 X1)) \Rightarrow (m2\_subset\_1 (k2\_nat\_1 X0 X1) k1\_numbers k5\_numbers) \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((v2\_pre\_topc X0) \wedge (l1\_pre\_topc X0)) \wedge \\
& ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc X1))) \Rightarrow ((v1\_pre\_topc (k2\_borsuk\_1 \\
& X0 X1)) \wedge ((v2\_pre\_topc (k2\_borsuk\_1 X0 X1)) \wedge (l1\_pre\_topc (k2\_borsuk\_1 \\
& X0 X1))))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(v7\_ordinal1 X0) \Rightarrow ((v1\_metric\_1 (k14\_euclid X0)) \wedge \\
& ((v6\_metric\_1 (k14\_euclid X0)) \wedge ((v7\_metric\_1 (k14\_euclid X0)) \wedge \\
& ((v8\_metric\_1 (k14\_euclid X0)) \wedge ((v9\_metric\_1 (k14\_euclid X0)) \wedge \\
& (l1\_metric\_1 (k14\_euclid X0))))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_pre\_topc\ X0) \Rightarrow (\forall X1.(l1\_pre\_topc\ X1) \Rightarrow (( \\ r1\_t\_0topsp\ X0\ X1) \Leftrightarrow (\exists X2.((v1\_funct\_1\ X2) \wedge ((v1\_funct\_2 \\ X2\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1)) \wedge (m1\_subset\_1\ X2\ (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1)))))) \wedge (v3\_tops\_2 \\ X2\ X0\ X1)))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.(m1\_subset\_1\ X0\ k4\_ordinal1) \Rightarrow (v7\_ordinal1\ X0) \quad (12)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0)) \Rightarrow (v1\_xboole\_0\ X1)) \quad (13)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(m1\_subset\_1\ X0\ k5\_numbers) \Rightarrow (\forall X1.(m1\_subset\_1 \\ X1\ k5\_numbers) \Rightarrow (r1\_t\_0topsp\ (k2\_borsuk\_1\ (k3\_pcomps\_1\ (k14\_euclid \\ X0))\ (k3\_pcomps\_1\ (k14\_euclid\ X1)))\ (k3\_pcomps\_1\ (k14\_euclid \\ (k2\_nat\_1\ X0\ X1)))) \end{aligned}$$