

# t10\_topreal1 (TMRNcWSat- dLnnJ5zEV47FF7pXR6THVxk7kC)

October 27, 2020

Let  $v7\_ordinal1 : \iota \Rightarrow o$  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  $k15\_euclid : \iota \Rightarrow \iota$  be given. Let  $r1\_topreal1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_rltopsp1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v2\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v5\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v6\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v7\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v8\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $l1\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $k6\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v8\_pre\_topc : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v5\_rltopsp1 : \iota \Rightarrow o$  be given. Let  $l1\_rltopsp1 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} \forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ (k15\_euclid X0))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 ( \\ k15\_euclid X0))) \Rightarrow ((X1 \neq X2) \Rightarrow (r1\_topreal1 (k15\_euclid X0) X1 X2 \\ (k1\_rltopsp1 (k15\_euclid X0) X1 X2)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0.\forall X1.\neg(X0 \in X1) \wedge (v1\_xboole\_0 X1) \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\ ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge (l1\_rlvect\_1 \\ X0)))))))))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow \\ (k1\_rltopsp1 X0 X1 X1 = k6\_domain\_1 (u1\_struct\_0 X0) X1)) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (k2\_xboole\_0 (k1\_tarski X0) X1 = X1) \quad (4)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v2\_pre\_topc\ X0)\wedge((v8\_pre\_topc\ X0)\wedge(l1\_pre\_topc \\
& X0)))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\
& X0)))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\
& X0)))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X0))\Rightarrow(\forall X4. \\
& (m1\_subset\_1\ X4\ (u1\_struct\_0\ X0))\Rightarrow(\forall X5.(m1\_subset\_1\ X5 \\
& (u1\_struct\_0\ X0))\Rightarrow(((r1\_topreal1\ X0\ X3\ X4\ X1)\wedge((r1\_topreal1\ X0 \\
& X4\ X5\ X2)\wedge(k9\_subset\_1\ (u1\_struct\_0\ X0)\ X1\ X2 = k1\_tarski\ X4)))\Rightarrow \\
& (r1\_topreal1\ X0\ X3\ X5\ (k4\_subset\_1\ (u1\_struct\_0\ X0)\ X1\ X2)))))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1. \\
& (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(\forall X2. \\
& (m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(\forall X3.(m1\_subset\_1\ X3 \\
& (u1\_struct\_0\ X0))\Rightarrow((r1\_topreal1\ X0\ X2\ X3\ X1)\Rightarrow((X2 \in X1)\wedge(X3 \in X1))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((\neg v1\_xboole\_0\ X0)\wedge(m1\_subset\_1\ X1\ X0))\Rightarrow \\
& (k6\_domain\_1\ X0\ X1 = k1\_tarski\ X1)
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\
& X0))\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0)))\Rightarrow(k4\_subset\_1\ X0\ X1\ X2 = \\
& k2\_xboole\_0\ X1\ X2)
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(v7\_ordinal1\ X0)\Rightarrow(((v2\_pre\_topc\ (k15\_euclid\ X0))\wedge \\
& ((v13\_algstr\_0\ (k15\_euclid\ X0))\wedge((v2\_rlvect\_1\ (k15\_euclid\ X0))\wedge \\
& ((v3\_rlvect\_1\ (k15\_euclid\ X0))\wedge((v4\_rlvect\_1\ (k15\_euclid\ X0))\wedge \\
& ((v5\_rlvect\_1\ (k15\_euclid\ X0))\wedge((v6\_rlvect\_1\ (k15\_euclid\ X0))\wedge \\
& ((v7\_rlvect\_1\ (k15\_euclid\ X0))\wedge((v8\_rlvect\_1\ (k15\_euclid\ X0))\wedge \\
& (v5\_rltopsp1\ (k15\_euclid\ X0))))))))))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(v7\_ordinal1\ X0)\Rightarrow((\neg v2\_struct\_0\ (k15\_euclid\ X0))\wedge \\
& (v5\_rltopsp1\ (k15\_euclid\ X0)))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(v7\_ordinal1\ X0)\Rightarrow((v8\_pre\_topc\ (k15\_euclid\ X0))\wedge \\
& (v5\_rltopsp1\ (k15\_euclid\ X0)))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l1\_rltopsp1\ X0)\Rightarrow((l1\_rlvect\_1\ X0)\wedge(l1\_pre\_topc\ X0))
\end{aligned} \tag{12}$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X1 X0))\Rightarrow (m1\_subset\_1 (k6\_domain\_1 X0 X1) (k1\_zfmisc\_1 X0)) \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((v13\_algstr\_0 \\ & X0)\wedge((v2\_rlvect\_1 X0)\wedge((v3\_rlvect\_1 X0)\wedge((v4\_rlvect\_1 X0)\wedge \\ & ((v5\_rlvect\_1 X0)\wedge((v6\_rlvect\_1 X0)\wedge((v7\_rlvect\_1 X0)\wedge((v8\_rlvect\_1 \\ & X0)\wedge(l1\_rlvect\_1 X0))))))))))\wedge((m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0))\wedge(m1\_subset\_1 X2 (u1\_struct\_0 X0)))\Rightarrow(m1\_subset\_1 (k1\_rltopsp1 \\ & X0 X1 X2) (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \end{aligned} \quad (14)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0)\Rightarrow((v5\_rltopsp1 (k15\_euclid X0))\wedge (l1\_rltopsp1 (k15\_euclid X0))) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.k2\_xboole\_0 X0 X1 = k2\_xboole\_0 X1 X0 \quad (16)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0))\Rightarrow(v1\_xboole\_0 X1)) \quad (17)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(v7\_ordinal1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 (k15\_euclid X0))))\Rightarrow(\forall X2.(m1\_subset\_1 X2 \\ & (u1\_struct\_0 (k15\_euclid X0)))\Rightarrow(\forall X3.(m1\_subset\_1 X3 ( \\ & u1\_struct\_0 (k15\_euclid X0)))\Rightarrow(\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\ & (k15\_euclid X0)))\Rightarrow(((r1\_topreal1 (k15\_euclid X0) X2 X3 X1)\wedge(k9\_subset\_1 \\ & (u1\_struct\_0 (k15\_euclid X0)) X1 (k1\_rltopsp1 (k15\_euclid X0) \\ & X3 X4) = k1\_tarski X3)\Rightarrow(r1\_topreal1 (k15\_euclid X0) X2 X4 (k4\_subset\_1 \\ & (u1\_struct\_0 (k15\_euclid X0)) X1 (k1\_rltopsp1 (k15\_euclid X0) \\ & X3 X4)))))))))) \end{aligned}$$