

# l5\_topreal1 (TMSJFXpEAT- MoxRUxFRHZ9DUdPG6GsLvMhXW)

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Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k15\_euclid : \iota \Rightarrow \iota$  be given. Let  $k1\_rltopsp1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  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  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_convex1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v5\_rltopsp1 : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $l1\_rltopsp1 : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (v13\_algstr\_0 X0) \wedge (v2\_rlvect\_1 \\
 & X0) \wedge (v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge (v5\_rlvect\_1 X0) \wedge \\
 & ((v6\_rlvect\_1 X0) \wedge (v7\_rlvect\_1 X0) \wedge (v8\_rlvect\_1 X0) \wedge (l1\_rlvect\_1 \\
 & X0)))))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow \\
 & (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (X1 \in k1\_rltopsp1 \\
 & X0 X1 X2))) \tag{1}
 \end{aligned}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (v13\_algstr\_0 X0) \wedge (v2\_rlvect\_1 \\
 & X0) \wedge (v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge (v5\_rlvect\_1 X0) \wedge \\
 & ((v6\_rlvect\_1 X0) \wedge (v7\_rlvect\_1 X0) \wedge (v8\_rlvect\_1 X0) \wedge (l1\_rlvect\_1 \\
 & X0)))))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\
 & X0))) \Rightarrow ((v1\_convex1 X1 X0) \Leftrightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 \\
 & X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (((X2 \in X1) \wedge \\
 & (X3 \in X1)) \Rightarrow (r1\_tarski (k1\_rltopsp1 X0 X2 X3) X1)))))) \tag{2}
 \end{aligned}$$

Assume the following.

$$\begin{aligned} \forall X0.(v7\_ordinal1\ X0) \Rightarrow & ((v2\_pre\_topc\ (k15\_euclid\ X0)) \wedge \\ & ((v13\_algstr\_0\ (k15\_euclid\ X0)) \wedge (v2\_rlvect\_1\ (k15\_euclid\ X0)) \wedge \\ & ((v3\_rlvect\_1\ (k15\_euclid\ X0)) \wedge (v4\_rlvect\_1\ (k15\_euclid\ X0)) \wedge \\ & ((v5\_rlvect\_1\ (k15\_euclid\ X0)) \wedge (v6\_rlvect\_1\ (k15\_euclid\ X0)) \wedge \\ & ((v7\_rlvect\_1\ (k15\_euclid\ X0)) \wedge (v8\_rlvect\_1\ (k15\_euclid\ X0)) \wedge \\ & (v5\_rltopsp1\ (k15\_euclid\ X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0) \Rightarrow ((-v2\_struct\_0\ (k15\_euclid\ X0)) \wedge (v5\_rltopsp1\ (k15\_euclid\ X0))) \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2. & (((-v2\_struct\_0\ X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge (v2\_rlvect\_1\ X0) \wedge (v3\_rlvect\_1\ X0) \wedge (v4\_rlvect\_1\ X0) \wedge \\ & ((v5\_rlvect\_1\ X0) \wedge (v6\_rlvect\_1\ X0) \wedge (v7\_rlvect\_1\ X0) \wedge (v8\_rlvect\_1 \\ & X0) \wedge (l1\_rlvect\_1\ X0)))))) \wedge ((m1\_subset\_1\ X1\ (u1\_struct\_0 \\ & X0)) \wedge (m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))) \Rightarrow ((-v1\_xboole\_0\ (k1\_rltopsp1 \\ & X0\ X1\ X2)) \wedge (v1\_convex1\ (k1\_rltopsp1\ X0\ X1\ X2)\ X0)) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.(l1\_rltopsp1\ X0) \Rightarrow ((l1\_rlvect\_1\ X0) \wedge (l1\_pre\_topc\ X0)) \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2. & (((-v2\_struct\_0\ X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge (v2\_rlvect\_1\ X0) \wedge (v3\_rlvect\_1\ X0) \wedge (v4\_rlvect\_1\ X0) \wedge \\ & ((v5\_rlvect\_1\ X0) \wedge (v6\_rlvect\_1\ X0) \wedge (v7\_rlvect\_1\ X0) \wedge (v8\_rlvect\_1 \\ & X0) \wedge (l1\_rlvect\_1\ X0)))))) \wedge ((m1\_subset\_1\ X1\ (u1\_struct\_0 \\ & X0)) \wedge (m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))) \Rightarrow (m1\_subset\_1\ (k1\_rltopsp1 \\ & X0\ X1\ X2)\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0) \Rightarrow ((v5\_rltopsp1\ (k15\_euclid\ X0)) \wedge (l1\_rltopsp1\ (k15\_euclid\ X0))) \quad (8)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(v7\_ordinal1\ X0) \Rightarrow & (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0 \\ & (k15\_euclid\ X0))) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ ( \\ & k15\_euclid\ X0))) \Rightarrow (\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ (k15\_euclid \\ & X0))) \Rightarrow ((X1 \in k1\_rltopsp1\ (k15\_euclid\ X0)\ X2\ X3) \Rightarrow (r1\_tarski\ (k1\_rltopsp1 \\ & (k15\_euclid\ X0)\ X2\ X1)\ (k1\_rltopsp1\ (k15\_euclid\ X0)\ X2\ X3)))))) \end{aligned}$$