

## t6\_topreal2

(TMZETKg3e7KX4WtVZ5L4t8tdk8NDaCdnGMW)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  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  $np\_2 : \iota$  be given. Let  $v1\_topreal2 : \iota \Rightarrow o$  be given. Let  $r1\_topreal1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v1\_xboole\_0 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 ( \\
 & \quad u1\_struct\_0 (k15\_euclid np\_2)))))) \Rightarrow ((v1\_topreal2 X0) \Leftrightarrow ((\exists X1. \\
 & \quad (m1\_subset\_1 X1 (u1\_struct\_0 (k15\_euclid np\_2)))) \wedge (\exists X2. \\
 & \quad (m1\_subset\_1 X2 (u1\_struct\_0 (k15\_euclid np\_2)))) \wedge ((X1 \neq X2) \wedge \\
 & \quad ((X1 \in X0) \wedge (X2 \in X0)))))) \wedge (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 \\
 & \quad (k15\_euclid np\_2)))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 \\
 & \quad (k15\_euclid np\_2)))) \Rightarrow (\neg (X1 \neq X2) \wedge ((X1 \in X0) \wedge ((X2 \in X0) \wedge (\forall X3. \\
 & \quad ((\neg v1\_xboole\_0 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 \\
 & \quad (k15\_euclid np\_2)))))) \Rightarrow (\forall X4. ((\neg v1\_xboole\_0 X4) \wedge (m1\_subset\_1 \\
 & \quad X4 (k1\_zfmisc\_1 (u1\_struct\_0 (k15\_euclid np\_2)))))) \Rightarrow (\neg (r1\_topreal1 \\
 & \quad (k15\_euclid np\_2) X1 X2 X3) \wedge ((r1\_topreal1 (k15\_euclid np\_2) \\
 & \quad X1 X2 X4) \wedge ((X0 = k4\_subset\_1 (u1\_struct\_0 (k15\_euclid np\_2)) X3 \\
 & \quad X4) \wedge (k9\_subset\_1 (u1\_struct\_0 (k15\_euclid np\_2)) X3 X4 = k2\_tarski \\
 & \quad X1 X2))))))))))
 \end{aligned}
 \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_subset\_1 X0 (u1\_struct\_0 (k15\_euclid np\_2))) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 (k15\_euclid np\_2))) \Rightarrow \\
& (\forall X2.((\neg v1\_xboole\_0 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (u1\_struct\_0 (k15\_euclid np\_2))))) \Rightarrow (\forall X3.((\neg v1\_xboole\_0 \\
& X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 (k15\_euclid np\_2))))) \Rightarrow \\
& (\forall X4.((\neg v1\_xboole\_0 X4) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 \\
& (u1\_struct\_0 (k15\_euclid np\_2))))) \Rightarrow (((r1\_topreal1 (k15\_euclid \\
& np\_2) X0 X1 X3) \wedge ((r1\_topreal1 (k15\_euclid np\_2) X0 X1 X4) \wedge ((X2 = \\
& k4\_subset\_1 (u1\_struct\_0 (k15\_euclid np\_2)) X3 X4) \wedge (k9\_subset\_1 \\
& (u1\_struct\_0 (k15\_euclid np\_2)) X3 X4 = k2\_tarski X0 X1)))) \Rightarrow (v1\_topreal2 \\
& X2))))))
\end{aligned} \tag{2}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 ( \\
& u1\_struct\_0 (k15\_euclid np\_2))))) \Rightarrow ((v1\_topreal2 X0) \Leftrightarrow (\exists X1. \\
& (m1\_subset\_1 X1 (u1\_struct\_0 (k15\_euclid np\_2))) \wedge (\exists X2. \\
& (m1\_subset\_1 X2 (u1\_struct\_0 (k15\_euclid np\_2))) \wedge (\exists X3. \\
& ((\neg v1\_xboole\_0 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 \\
& (k15\_euclid np\_2))))) \wedge (\exists X4.((\neg v1\_xboole\_0 X4) \wedge (m1\_subset\_1 \\
& X4 (k1\_zfmisc\_1 (u1\_struct\_0 (k15\_euclid np\_2))))) \wedge ((X1 \neq X2) \wedge \\
& ((X1 \in X0) \wedge (X2 \in X0) \wedge ((r1\_topreal1 (k15\_euclid np\_2) X1 X2 X3) \wedge \\
& ((r1\_topreal1 (k15\_euclid np\_2) X1 X2 X4) \wedge ((X0 = k4\_subset\_1 ( \\
& u1\_struct\_0 (k15\_euclid np\_2)) X3 X4) \wedge (k9\_subset\_1 (u1\_struct\_0 \\
& (k15\_euclid np\_2)) X3 X4 = k2\_tarski X1 X2))))))))))
\end{aligned}$$