

t2\_matroid0  
(TMc28zdN225qz5ZjgqiNQcx2544eYPcv7Fxx)

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Let  $v1\_matroid0 : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v3\_pencil\_1 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k1\_matroid0 : \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $v3\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $u1\_pre\_topc : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. r1\_tarski\ k1\_xboole\_0\ X0 \quad (1)$$

Assume the following.

$$\forall X0. m1\_subset\_1\ k1\_xboole\_0\ (k1\_zfmisc\_1\ X0) \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. ((\neg v3\_pencil\_1\ X0) \wedge ((v1\_matroid0\ X0) \wedge (l1\_pre\_topc \\ X0))) \Rightarrow (\forall X1. ((v3\_pre\_topc\ X1\ X0) \wedge (m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0)))) \Rightarrow (\forall X2. (r1\_tarski\ X2\ X1) \Rightarrow ((v3\_pre\_topc \\ X2\ X0) \wedge (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0. ((\neg v3\_pencil\_1\ X0) \wedge (l1\_pre\_topc\ X0)) \Rightarrow (\exists X1. \\ (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \wedge (v3\_pre\_topc \\ X1\ X0)) \quad (4)$$

Assume the following.

$$\forall X0. (l1\_pre\_topc\ X0) \Rightarrow ((v3\_pencil\_1\ X0) \Leftrightarrow (v1\_xboole\_0 \\ (u1\_pre\_topc\ X0))) \quad (5)$$

Assume the following.

$$\forall X0. (l1\_pre\_topc\ X0) \Rightarrow (\forall X1. (m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0))) \Rightarrow ((v3\_pre\_topc\ X1\ X0) \Leftrightarrow (X1 \in k1\_matroid0\ X0))) \quad (6)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Leftrightarrow (\forall X1. \neg X1 \in X0) \quad (7)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc X0) \Rightarrow (k1\_matroid0 X0 = u1\_pre\_topc X0) \quad (8)$$

**Theorem 1**

$$\forall X0.((v1\_matroid0 X0) \wedge (l1\_pre\_topc X0)) \Rightarrow ((\neg v3\_pencil\_1 X0) \Leftrightarrow (k1\_xboole\_0 \in k1\_matroid0 X0))$$