

## t2\_rel2

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v2\_relat\_2 : \iota \Rightarrow o$  be given. Let  $r1\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_relat\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_relat\_1 : \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k3\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_relat\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. (\neg(\neg r1\_xboole\_0 X0 X1) \wedge (\forall X2. \neg(X2 \in X0) \wedge (X2 \in X1))) \wedge (\neg(\exists X2. (X2 \in X0) \wedge (X2 \in X1)) \wedge (r1\_xboole\_0 X0 X1)) \quad (1)$$

Assume the following.

$$\forall X0. (v1\_relat\_1 X0) \Rightarrow ((\forall X1. \forall X2. \neg k4\_tarski X1 X2 \in X0) \Rightarrow (X0 = k1\_xboole\_0)) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. (v1\_relat\_1 X0) \Rightarrow (v1\_relat\_1 (k3\_xboole\_0 X0 X1)) \quad (3)$$

Assume the following.

$$\forall X0. v1\_relat\_1 (k4\_relat\_1 X0) \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. (r1\_xboole\_0 X0 X1) \Leftrightarrow (k3\_xboole\_0 X0 X1 = k1\_xboole\_0) \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (X2 = k3\_xboole\_0 X0 X1) \Leftrightarrow (\forall X3. (X3 \in X2) \Leftrightarrow ((X3 \in X0) \wedge (X3 \in X1))) \quad (6)$$

Assume the following.

$$\forall X0. (v1\_relat\_1 X0) \Rightarrow (\forall X1. (r2\_relat\_2 X0 X1) \Leftrightarrow (\forall X2. \neg(X2 \in X1) \wedge (k4\_tarski X2 X2 \in X0))) \quad (7)$$

Assume the following.

$$\forall X0.(v1\_relat\_1 X0) \Rightarrow ((v2\_relat\_2 X0) \Leftrightarrow (r2\_relat\_2 X0 (k1\_relat\_1 X0))) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.(v1\_relat\_1 X1) \Rightarrow ((X1 = k4\_relat\_1 X0) \Leftrightarrow (\forall X2.\forall X3.(k4\_tarski X2 X3 \in X1) \Leftrightarrow ((X2 \in X0) \wedge (X2 = X3)))) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.k3\_xboole\_0 X0 X1 = k3\_xboole\_0 X1 X0 \quad (10)$$

**Theorem 1**

$$\forall X0.(v1\_relat\_1 X0) \Rightarrow ((v2\_relat\_2 X0) \Leftrightarrow (r1\_xboole\_0 (k4\_relat\_1 (k1\_relat\_1 X0)) X0))$$