

t6\_sysrel  
(TMdLDQ36WkUUdxBv66r9AceLRtNqS7d9D8S)

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $k3\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_relat\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(v1\_relat\_1 X1) \Rightarrow (k2\_relat\_1 (k3\_relat\_1 X0 X1) = k3\_relat\_1 (k2\_relat\_1 X1) (k2\_relat\_1 X0))) \quad (1)$$

Assume the following.

$$\forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(v1\_relat\_1 X1) \Rightarrow (\forall X2.(v1\_relat\_1 X2) \Rightarrow (k3\_relat\_1 X0 (k2\_xboole\_0 X1 X2) = k2\_xboole\_0 (k3\_relat\_1 X0 X1) (k3\_relat\_1 X0 X2)))) \quad (2)$$

Assume the following.

$$\forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(v1\_relat\_1 X1) \Rightarrow (k2\_relat\_1 (k2\_xboole\_0 X0 X1) = k2\_xboole\_0 (k2\_relat\_1 X0) (k2\_relat\_1 X1))) \quad (3)$$

Assume the following.

$$\forall X0.(v1\_relat\_1 X0) \Rightarrow (k2\_relat\_1 (k2\_relat\_1 X0) = X0) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X0) \wedge (v1\_relat\_1 X1)) \Rightarrow (v1\_relat\_1 (k2\_xboole\_0 X0 X1)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.v1\_relat\_1 (k3\_relat\_1 X0 X1) \quad (6)$$

Assume the following.

$$\forall X0.(v1\_relat\_1 X0) \Rightarrow (v1\_relat\_1 (k2\_relat\_1 X0)) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.k2\_xboole\_0 X0 X1 = k2\_xboole\_0 X1 X0 \quad (8)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(v1\_relat\_1 X1) \Rightarrow (\forall X2. \\ & (v1\_relat\_1 X2) \Rightarrow (k3\_relat\_1 (k2\_xboole\_0 X0 X1) X2 = k2\_xboole\_0 \\ & (k3\_relat\_1 X0 X2) (k3\_relat\_1 X1 X2)))) \end{aligned}$$