

t16\_altcat\_3 (TMJN-  
rGZ3FLyUAxMmEintjrgLTxtQsYFVbGu)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $v11\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $v12\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $l2\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_altcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v2\_altcat\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_altcat\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_altcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v5\_altcat\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k8\_altcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_altcat\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\ & X0) \wedge (l2\_altcat\_1 X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\neg(k1\_altcat\_1 X0 X1 X2 \neq k1\_xboole\_0) \wedge \\ & ((k1\_altcat\_1 X0 X2 X3 \neq k1\_xboole\_0) \wedge (\exists X4.(m1\_subset\_1 \\ & X4 (k1\_altcat\_1 X0 X1 X2)) \wedge (\exists X5.(m1\_subset\_1 X5 (k1\_altcat\_1 \\ & X0 X2 X3)) \wedge ((v4\_altcat\_3 (k5\_altcat\_1 X0 X1 X2 X3 X4 X5) X0 X1 X3) \wedge \\ & (\neg v4\_altcat\_3 X4 X0 X1 X2)))))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow ((v5\_altcat\_3 \\ & (k8\_altcat\_1 X0 X1) X0 X1 X1) \wedge (v4\_altcat\_3 (k8\_altcat\_1 X0 X1) X0 \\ & X1 X1))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ & (k1\_altcat\_1 X0 X1 X2)) \Rightarrow ((v2\_altcat\_3 X3 X0 X1 X2) \Leftrightarrow (\exists X4. \\ & (m1\_subset\_1 X4 (k1\_altcat\_1 X0 X2 X1)) \wedge (r1\_altcat\_3 X0 X2 X1 X4 \\ & X3)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 \\
& \quad X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\
& \quad (k1\_altcat\_1 X0 X1 X2)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (k1\_altcat\_1 \\
& \quad X0 X2 X1)) \Rightarrow ((r1\_altcat\_3 X0 X1 X2 X3 X4) \Leftrightarrow (k5\_altcat\_1 X0 X2 X1 X2 X4 \\
& \quad X3 = k8\_altcat\_1 X0 X2))))))
\end{aligned} \tag{4}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\
& \quad X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))))) \Rightarrow (\forall X1.(m1\_subset\_1 \\
& \quad X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\
& \quad X0)) \Rightarrow (\neg(k1\_altcat\_1 X0 X1 X2 \neq k1\_xboole\_0) \wedge ((k1\_altcat\_1 X0 X2 \\
& \quad X1 \neq k1\_xboole\_0) \wedge (\exists X3.(m1\_subset\_1 X3 (k1\_altcat\_1 X0 \\
& \quad X1 X2)) \wedge ((v2\_altcat\_3 X3 X0 X1 X2) \wedge (\neg v4\_altcat\_3 X3 X0 X1 X2))))))
\end{aligned}$$