

t21\_yellow18 (TMY-  
wCzK2Dj34QJQQaaj5MhBXWobbKWsEBXG)

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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  $r2\_yellow18 : \iota \Rightarrow \iota \Rightarrow o$  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  $v1\_altcat\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_altcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge (l2\_altcat\_1 \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_altcat\_1 X1) \wedge (l2\_altcat\_1 \\
& X1))) \Rightarrow ((r2\_yellow18 X0 X1) \Leftrightarrow ((u1\_struct\_0 X1 = u1\_struct\_0 X0) \wedge \\
& (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 \\
& X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 X1)) \Rightarrow (\forall X6. \\
& (m1\_subset\_1 X6 (u1\_struct\_0 X1)) \Rightarrow (\forall X7.(m1\_subset\_1 X7 \\
& (u1\_struct\_0 X1)) \Rightarrow (((X5 = X2) \wedge ((X6 = X3) \wedge (X7 = X4))) \Rightarrow ((k1\_altcat\_1 \\
& X0 X2 X3 = k1\_altcat\_1 X1 X6 X5) \wedge (\neg(k1\_altcat\_1 X0 X2 X3 \neq k1\_xboole\_0)) \wedge \\
& ((k1\_altcat\_1 X0 X3 X4 \neq k1\_xboole\_0) \wedge (\exists X8.(m1\_subset\_1 \\
& X8 (k1\_altcat\_1 X0 X2 X3)) \wedge (\exists X9.(m1\_subset\_1 X9 (k1\_altcat\_1 \\
& X0 X3 X4)) \wedge (\exists X10.(m1\_subset\_1 X10 (k1\_altcat\_1 X1 X6 X5)) \wedge \\
& (\exists X11.(m1\_subset\_1 X11 (k1\_altcat\_1 X1 X7 X6)) \wedge ((X10 = X8) \wedge \\
& ((X11 = X9) \wedge (k5\_altcat\_1 X1 X7 X6 X5 X11 X10 \neq k5\_altcat\_1 X0 X2 X3 X4 \\
& X8 X9)))))))))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge (l2\_altcat\_1 X0)) \wedge \\
& ((\neg v2\_struct\_0 X1) \wedge (l2\_altcat\_1 X1))) \Rightarrow ((r2\_yellow18 X0 X1) \Rightarrow \\
& (r2\_yellow18 X1 X0))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\
& \quad X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))))) \Rightarrow (\forall X1.(( \\
& \neg v2\_struct\_0 X1) \wedge ((v2\_altcat\_1 X1) \wedge ((v11\_altcat\_1 X1) \wedge ((v12\_altcat\_1 \\
& \quad X1) \wedge (l2\_altcat\_1 X1)))))) \Rightarrow ((r2\_yellow18 X0 X1) \Rightarrow (\forall X2.( \\
& \quad m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\
& (u1\_struct\_0 X0)) \Rightarrow (\neg(k1\_altcat\_1 X0 X2 X3 \neq k1\_xboole\_0) \wedge ((k1\_altcat\_1 \\
& \quad X0 X3 X2 \neq k1\_xboole\_0) \wedge (\exists X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\
& \quad X1)) \wedge (\exists X5.(m1\_subset\_1 X5 (u1\_struct\_0 X1)) \wedge ((X4 = X2) \wedge \\
& \quad ((X5 = X3) \wedge (\exists X6.(m1\_subset\_1 X6 (k1\_altcat\_1 X0 X2 X3)) \wedge \\
& \quad (\exists X7.(m1\_subset\_1 X7 (k1\_altcat\_1 X1 X5 X4)) \wedge ((X7 = X6) \wedge \\
& \quad (\neg((v1\_altcat\_3 X6 X0 X2 X3) \Rightarrow (v2\_altcat\_3 X7 X1 X5 X4)) \wedge ((v2\_altcat\_3 \\
& \quad X6 X0 X2 X3) \Rightarrow (v1\_altcat\_3 X7 X1 X5 X4))))))))))))))))) \quad (3)
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\
& \quad X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))))) \Rightarrow (\forall X1.(( \\
& \neg v2\_struct\_0 X1) \wedge ((v2\_altcat\_1 X1) \wedge ((v11\_altcat\_1 X1) \wedge ((v12\_altcat\_1 \\
& \quad X1) \wedge (l2\_altcat\_1 X1)))))) \Rightarrow ((r2\_yellow18 X0 X1) \Rightarrow (\forall X2.( \\
& \quad m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\
& (u1\_struct\_0 X0)) \Rightarrow (\neg(k1\_altcat\_1 X0 X2 X3 \neq k1\_xboole\_0) \wedge ((k1\_altcat\_1 \\
& \quad X0 X3 X2 \neq k1\_xboole\_0) \wedge (\exists X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\
& \quad X1)) \wedge (\exists X5.(m1\_subset\_1 X5 (u1\_struct\_0 X1)) \wedge ((X4 = X2) \wedge \\
& \quad ((X5 = X3) \wedge (\exists X6.(m1\_subset\_1 X6 (k1\_altcat\_1 X0 X2 X3)) \wedge \\
& \quad (\exists X7.(m1\_subset\_1 X7 (k1\_altcat\_1 X1 X5 X4)) \wedge ((X7 = X6) \wedge \\
& \quad (\neg(v2\_altcat\_3 X6 X0 X2 X3) \Leftrightarrow (v1\_altcat\_3 X7 X1 X5 X4)))))))))))))))))
\end{aligned}$$