

t31\_pcs\_0  
(TMZR6AVqxbYPfaKFsRH2kfXpLj68f1jVUaY)

October 27, 2020

Let  $v13\_pcs\_0 : \iota \Rightarrow o$  be given. Let  $l2\_pcs\_0 : \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k19\_pcs\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_pcs\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_orders\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v12\_pcs\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(l2\_pcs\_0 X0) \Rightarrow (\forall X1.\forall X2.(m1\_subset\_1 \\ & \quad X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\ & \quad X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 (k19\_pcs\_0 X0 X1))) \Rightarrow \\ & \quad (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 (k19\_pcs\_0 X0 X1))) \Rightarrow \\ & \quad (((X2 = X4) \wedge ((X3 = X5) \wedge (r1\_pcs\_0 (k19\_pcs\_0 X0 X1) X4 X5))) \Rightarrow ((X2 = \\ & \quad X1) \vee ((X3 = X1) \vee (r1\_pcs\_0 X0 X2 X3))))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.(l2\_pcs\_0 X0) \Rightarrow (\forall X1.\forall X2.(m1\_subset\_1 \\ & \quad X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\ & \quad X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 (k19\_pcs\_0 X0 X1))) \Rightarrow \\ & \quad (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 (k19\_pcs\_0 X0 X1))) \Rightarrow \\ & \quad (((X2 = X4) \wedge ((X3 = X5) \wedge (r1\_pcs\_0 X0 X2 X3))) \Rightarrow (r1\_pcs\_0 (k19\_pcs\_0 \\ & \quad X0 X1) X4 X5)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.(l2\_pcs\_0 X0) \Rightarrow (\forall X1.\forall X2.(m1\_subset\_1 \\ & \quad X2 (u1\_struct\_0 (k19\_pcs\_0 X0 X1))) \Rightarrow (\forall X3.(m1\_subset\_1 \\ & \quad X3 (u1\_struct\_0 (k19\_pcs\_0 X0 X1))) \Rightarrow ((X2 = X1) \Rightarrow ((r1\_pcs\_0 (k19\_pcs\_0 \\ & \quad X0 X1) X2 X3) \wedge (r1\_pcs\_0 (k19\_pcs\_0 X0 X1) X3 X2)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l2\_pcs\_0 X0) \Rightarrow (\forall X1.\forall X2.(m1\_subset\_1 \\
& X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 (k19\_pcs\_0 X0 X1))) \Rightarrow \\
& (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 (k19\_pcs\_0 X0 X1))) \Rightarrow \\
& (((X2 = X4) \wedge ((X3 = X5) \wedge (r1\_orders\_2 (k19\_pcs\_0 X0 X1) X4 X5))) \Rightarrow ( \\
& (X2 = X1) \vee (r1\_orders\_2 X0 X2 X3))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l2\_pcs\_0 X0) \Rightarrow (\forall X1.\forall X2.(m1\_subset\_1 \\
& X2 (u1\_struct\_0 (k19\_pcs\_0 X0 X1))) \Rightarrow ((X2 \neq X1) \Rightarrow (X2 \in u1\_struct\_0 \\
& X0)))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l2\_pcs\_0 X0) \Rightarrow (\forall X1.\forall X2.(m1\_subset\_1 \\
& X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\
& (k19\_pcs\_0 X0 X1))) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\
& (k19\_pcs\_0 X0 X1))) \Rightarrow (((X2 = X3) \wedge (r1\_orders\_2 (k19\_pcs\_0 X0 X1) \\
& X3 X4)) \Rightarrow ((X2 = X1) \vee ((X1 \in u1\_struct\_0 X0) \vee ((X4 \in u1\_struct\_0 X0) \wedge \\
& (X4 \neq X1))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.(l2\_pcs\_0 X0) \Rightarrow ((v12\_pcs\_0 (k19\_pcs\_0 X0 X1)) \wedge (l2\_pcs\_0 (k19\_pcs\_0 X0 X1))) \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l2\_pcs\_0 X0) \Rightarrow ((v13\_pcs\_0 X0) \Leftrightarrow (\forall X1.(m1\_subset\_1 \\
& X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4. \\
& (m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow (((r1\_pcs\_0 X0 X1 X3) \wedge ((r1\_orders\_2 \\
& X0 X2 X1) \wedge (r1\_orders\_2 X0 X4 X3))) \Rightarrow (r1\_pcs\_0 X0 X2 X4))))))
\end{aligned} \tag{9}$$

**Theorem 1**

$$\forall X0.((v13\_pcs\_0 X0) \wedge (l2\_pcs\_0 X0)) \Rightarrow (\forall X1.(\neg X1 \in u1\_struct\_0 X0) \Rightarrow (v13\_pcs\_0 (k19\_pcs\_0 X0 X1)))$$