

# t26\_catalg\_1 (TMbFNnsdCH- FAR158MeDeQRlnLuW13jRA61p)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_cat\_1 : \iota \Rightarrow o$  be given. Let  $v3\_cat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_cat\_1 : \iota \Rightarrow o$  be given. Let  $v5\_cat\_1 : \iota \Rightarrow o$  be given. Let  $v6\_cat\_1 : \iota \Rightarrow o$  be given. Let  $l1\_cat\_1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_catalg\_1 : \iota \Rightarrow \iota$  be given. Let  $k10\_catalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k13\_catalg\_1 : \iota \Rightarrow \iota$  be given. Let  $k4\_card\_3 : \iota \Rightarrow \iota$  be given. Let  $k2\_finseq\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_catalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_catalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k4\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_graph\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_graph\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\
& X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\
& X0) \wedge (l1\_cat\_1 X0))))))) \Rightarrow (\forall X1. (l3\_msualg\_1 X1 (k3\_catalg\_1 \\
& (u1\_struct\_0 X0))) \Rightarrow ((\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (k1\_funct\_1 \\
& (u3\_msualg\_1 (k3\_catalg\_1 (u1\_struct\_0 X0)) X1) (k9\_catalg\_1 \\
& (u1\_struct\_0 X0) X2 X3) = k2\_cat\_1 X0 X2 X3))) \Rightarrow (\forall X2. (m1\_subset\_1 \\
& X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X4. (m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow ((k3\_msualg\_1 \\
& (k3\_catalg\_1 (u1\_struct\_0 X0)) (k10\_catalg\_1 (u1\_struct\_0 X0) \\
& X2 X3 X4) X1 = k4\_card\_3 (k2\_finseq\_4 (k1\_zfmisc\_1 (u4\_struct\_0 \\
& X0)) (k2\_cat\_1 X0 X3 X4) (k2\_cat\_1 X0 X2 X3))) \wedge (k4\_msualg\_1 (k3\_catalg\_1 \\
& (u1\_struct\_0 X0)) (k10\_catalg\_1 (u1\_struct\_0 X0) X2 X3 X4) X1 = k2\_cat\_1 \\
& X0 X2 X4)))))))))
\end{aligned}
\tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\ & X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\ & X0) \wedge (l1\_cat\_1 X0)))))))) \Rightarrow ((v3\_msualg\_1 (k13\_catalg\_1 X0) (k3\_catalg\_1 \\ & (u1\_struct\_0 X0))) \wedge (l3\_msualg\_1 (k13\_catalg\_1 X0) (k3\_catalg\_1 \\ & (u1\_struct\_0 X0)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\ & X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\ & X0) \wedge (l1\_cat\_1 X0)))))))) \Rightarrow (\forall X1.((v3\_msualg\_1 X1 (k3\_catalg\_1 \\ & (u1\_struct\_0 X0))) \wedge (l3\_msualg\_1 X1 (k3\_catalg\_1 (u1\_struct\_0 \\ & X0)))) \Rightarrow ((X1 = k13\_catalg\_1 X0) \Leftrightarrow ((\forall X2.(m1\_subset\_1 X2 ( \\ & u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow \\ & (k1\_funct\_1 (u3\_msualg\_1 (k3\_catalg\_1 (u1\_struct\_0 X0)) X1) ( \\ & k9\_catalg\_1 (u1\_struct\_0 X0) X2 X3) = k2\_cat\_1 X0 X2 X3))) \wedge ((\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (k1\_funct\_1 (k5\_msualg\_1 ( \\ & k3\_catalg\_1 (u1\_struct\_0 X0)) (k8\_catalg\_1 (u1\_struct\_0 X0) X2) \\ & X1) k1\_xboole\_0 = k4\_cat\_1 X0 X2)) \wedge (\forall X2.(m1\_subset\_1 X2 \\ & (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow \\ & (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow (\forall X5.(m1\_subset\_1 \\ & X5 (u4\_struct\_0 X0)) \Rightarrow (\forall X6.(m1\_subset\_1 X6 (u4\_struct\_0 \\ & X0)) \Rightarrow (((k3\_graph\_1 X0 X5 = X2) \wedge ((k4\_graph\_1 X0 X5 = X3) \wedge ((k3\_graph\_1 \\ & X0 X6 = X3) \wedge (k4\_graph\_1 X0 X6 = X4)))) \Rightarrow (k1\_funct\_1 (k5\_msualg\_1 \\ & (k3\_catalg\_1 (u1\_struct\_0 X0)) (k10\_catalg\_1 (u1\_struct\_0 X0) \\ & X2 X3 X4) X1) (k2\_finseq\_4 (u4\_struct\_0 X0) X6 X5) = k1\_cat\_1 X0 X5 \\ & X6)))))))))) \end{aligned} \quad (3)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\ & X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\ & X0) \wedge (l1\_cat\_1 X0)))))))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow ((k3\_msualg\_1 (k3\_catalg\_1 \\ & (u1\_struct\_0 X0)) (k10\_catalg\_1 (u1\_struct\_0 X0) X1 X2 X3) (k13\_catalg\_1 \\ & X0) = k4\_card\_3 (k2\_finseq\_4 (k1\_zfmisc\_1 (u4\_struct\_0 X0)) (k2\_cat\_1 \\ & X0 X2 X3) (k2\_cat\_1 X0 X1 X2))) \wedge (k4\_msualg\_1 (k3\_catalg\_1 (u1\_struct\_0 \\ & X0)) (k10\_catalg\_1 (u1\_struct\_0 X0) X1 X2 X3) (k13\_catalg\_1 X0) = \\ & k2\_cat\_1 X0 X1 X3)))))) \end{aligned}$$