

# t66\_cat\_1 (TMcqAavwBsfgxE- QCsS3LzkxbjVpFDbEHTRu)

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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  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge (\neg v11\_struct\_0 \\
& X0) \wedge ((v2\_cat\_1 X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 \\
& X0) \wedge ((v6\_cat\_1 X0) \wedge (l1\_cat\_1 X0)))))))) \wedge (((\neg v2\_struct\_0 X1) \wedge \\
& ((\neg v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\
& X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1)))))))) \wedge ((v1\_funct\_1 \\
& X2) \wedge ((v1\_funct\_2 X2 (u4\_struct\_0 X0) (u4\_struct\_0 X1)) \wedge (m1\_subset\_1 \\
& X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u4\_struct\_0 X0) (u4\_struct\_0 X1)))))) \Rightarrow \\
& ((v1\_funct\_1 (k7\_cat\_1 X0 X1 X2)) \wedge ((v1\_funct\_2 (k7\_cat\_1 X0 X1 \\
& X2) (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 (k7\_cat\_1 \\
& X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X1))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\
& X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\
& X0) \wedge (l1\_cat\_1 X0)))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((\neg \\
& v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\
& X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1)))))) \Rightarrow (\forall X2. \\
& ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u4\_struct\_0 X0) (u4\_struct\_0 \\
& X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u4\_struct\_0 \\
& X0) (u4\_struct\_0 X1)))))) \Rightarrow ((\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\
& X0)) \Rightarrow (\exists X4.(m1\_subset\_1 X4 (u1\_struct\_0 X1)) \wedge (k3\_funct\_2 \\
& (u4\_struct\_0 X0) (u4\_struct\_0 X1) X2 (k4\_cat\_1 X0 X3) = k4\_cat\_1 \\
& X1 X4))) \Rightarrow (\forall X3.((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow ((X3 = k7\_cat\_1 X0 X1 X2) \Leftrightarrow \\
& (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow (\forall X5.(m1\_subset\_1 \\
& X5 (u1\_struct\_0 X1)) \Rightarrow ((k3\_funct\_2 (u4\_struct\_0 X0) (u4\_struct\_0 \\
& X1) X2 (k4\_cat\_1 X0 X4) = k4\_cat\_1 X1 X5) \Rightarrow (k3\_funct\_2 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X1) X3 X4 = X5))))))))) \\
& \tag{2}
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\
& X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\
& X0) \wedge (l1\_cat\_1 X0)))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((\neg \\
& v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\
& X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1)))))) \Rightarrow (\forall X2. \\
& ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u4\_struct\_0 X0) (u4\_struct\_0 \\
& X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u4\_struct\_0 \\
& X0) (u4\_struct\_0 X1)))))) \Rightarrow ((\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\
& X0)) \Rightarrow (\exists X4.(m1\_subset\_1 X4 (u1\_struct\_0 X1)) \wedge (k3\_funct\_2 \\
& (u4\_struct\_0 X0) (u4\_struct\_0 X1) X2 (k4\_cat\_1 X0 X3) = k4\_cat\_1 \\
& X1 X4))) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4. \\
& (m1\_subset\_1 X4 (u1\_struct\_0 X1)) \Rightarrow ((k3\_funct\_2 (u4\_struct\_0 \\
& X0) (u4\_struct\_0 X1) X2 (k4\_cat\_1 X0 X3) = k4\_cat\_1 X1 X4) \Rightarrow (k3\_funct\_2 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X1) (k7\_cat\_1 X0 X1 X2) X3 = X4)))))))))
\end{aligned}$$