

# t5\_yellow21 (TMLhW- pRBisViMk9gqrZmMhTywEixSkU6GHa)

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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  $v2\_yellow21 : \iota \Rightarrow o$  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  $v3\_altcat\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v23\_waybel\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_yellow21 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_yellow21 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_altcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_yellow18 : \iota \Rightarrow o$  be given. Let  $v1\_yellow21 : \iota \Rightarrow o$  be given. Let  $k8\_altcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_yellow21 : \iota \Rightarrow \iota$  be given. Let  $v3\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v4\_orders\_2 : \iota \Rightarrow o$  be given. Let  $l1\_orders\_2 : \iota \Rightarrow o$  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  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v5\_orders\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_partfun1 : \iota \Rightarrow \iota$  be given. Let  $k4\_relat\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v5\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v1\_lattice3 : \iota \Rightarrow o$  be given. Let  $v2\_lattice3 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $k1\_altcat\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v4\_yellow18 : \iota \Rightarrow o$  be given. Let  $v9\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $v2\_yellow18 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\
& X0) \wedge ((v12\_altcat\_1 X0) \wedge ((v2\_yellow21 X0) \wedge (l2\_altcat\_1 X0)))))) \Rightarrow \\
& (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. (m1\_subset\_1 \\
& X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 \\
& X0)) \Rightarrow (\neg (k1\_altcat\_1 X0 X1 X2 \neq k1\_xboole\_0) \wedge ((k1\_altcat\_1 X0 X2 \\
& X3 \neq k1\_xboole\_0) \wedge (\neg \forall X4. (m1\_subset\_1 X4 (k1\_altcat\_1 X0 \\
& X1 X2)) \Rightarrow (\forall X5. (m1\_subset\_1 X5 (k1\_altcat\_1 X0 X2 X3)) \Rightarrow (k5\_altcat\_1 \\
& X0 X1 X2 X3 X4 X5 = k1\_partfun1 (u1\_struct\_0 (k3\_yellow21 X0 X1)) ( \\
& u1\_struct\_0 (k3\_yellow21 X0 X2)) (u1\_struct\_0 (k3\_yellow21 X0 \\
& X2)) (u1\_struct\_0 (k3\_yellow21 X0 X3)) (k5\_yellow21 X0 X1 X2 X4) \\
& (k5\_yellow21 X0 X2 X3 X5))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\ & X0) \wedge ((v12\_altcat\_1 X0) \wedge ((v3\_yellow18 X0) \wedge ((v1\_yellow21 X0) \wedge \\ & (l2\_altcat\_1 X0)))))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow (k8\_altcat\_1 X0 X1 = k3\_struct\_0 (k1\_yellow21 X1))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge ((v4\_orders\_2 \\ & X0) \wedge (l1\_orders\_2 X0)))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v3\_orders\_2 \\ & X1) \wedge ((v4\_orders\_2 X1) \wedge (l1\_orders\_2 X1)))) \Rightarrow (\forall X2.((v1\_funct\_1 \\ & X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow \\ & ((v23\_waybel\_0 X2 X0 X1) \Leftrightarrow ((v5\_orders\_3 X2 X0 X1) \wedge (\exists X3.( \\ & (v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 (u1\_struct\_0 X1) (u1\_struct\_0 \\ & X0)) \wedge ((v5\_orders\_3 X3 X1 X0) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (u1\_struct\_0 X1) (u1\_struct\_0 X0)))))) \wedge ((r2\_funct\_2 (u1\_struct\_0 \\ & X1) (u1\_struct\_0 X1) (k1\_partfun1 (u1\_struct\_0 X1) (u1\_struct\_0 \\ & X0) (u1\_struct\_0 X0) (u1\_struct\_0 X1) X3 X2) (k3\_struct\_0 X1)) \wedge \\ & (r2\_funct\_2 (u1\_struct\_0 X0) (u1\_struct\_0 X0) (k1\_partfun1 (u1\_struct\_0 \\ & X0) (u1\_struct\_0 X1) (u1\_struct\_0 X1) (u1\_struct\_0 X0) X2 X3) (k3\_struct\_0 \\ & X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X2) \wedge \\ & ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X1)))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 \\ & X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow ((r2\_funct\_2 X0 X1 X2 \\ & X3) \Leftrightarrow (X2 = X3)) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.k6\_partfun1 X0 = k4\_relat\_1 X0 \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge \\ & ((v11\_altcat\_1 X0) \wedge ((v12\_altcat\_1 X0) \wedge ((v2\_yellow21 X0) \wedge (l2\_altcat\_1 \\ & X0)))))) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow (k3\_yellow21 X0 \\ & X1 = k1\_yellow21 X1) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_relat\_1 (k4\_relat\_1 X0)) \wedge ((v4\_relat\_1 (k4\_relat\_1 \\ & X0) X0) \wedge ((v1\_funct\_1 (k4\_relat\_1 X0)) \wedge (v1\_partfun1 (k4\_relat\_1 \\ & X0) X0))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.(v1\_partfun1 (k6\_partfun1 X0) X0) \wedge (m1\_subset\_1 (k6\_partfun1 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0))) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\ & X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 X0) \wedge ((v12\_altcat\_1 X0) \wedge \\ & ((v2\_yellow21 X0) \wedge (l2\_altcat\_1 X0)))))) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \wedge ((m1\_subset\_1 X2 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X3 (k1\_altcat\_1 \\ & X0 X1 X2)))))) \Rightarrow ((v1\_funct\_1 (k5\_yellow21 X0 X1 X2 X3)) \wedge ((v1\_funct\_2 \\ & (k5\_yellow21 X0 X1 X2 X3) (u1\_struct\_0 (k3\_yellow21 X0 X1)) (u1\_struct\_0 \\ & (k3\_yellow21 X0 X2))) \wedge ((v5\_orders\_3 (k5\_yellow21 X0 X1 X2 X3) ( \\ & k3\_yellow21 X0 X1) (k3\_yellow21 X0 X2)) \wedge (m1\_subset\_1 (k5\_yellow21 \\ & X0 X1 X2 X3) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 (k3\_yellow21 \\ & X0 X1)) (u1\_struct\_0 (k3\_yellow21 X0 X2)))))))))) \quad (9) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge \\ & ((v11\_altcat\_1 X0) \wedge ((v12\_altcat\_1 X0) \wedge ((v2\_yellow21 X0) \wedge (l2\_altcat\_1 \\ & X0)))))) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow ((v3\_orders\_2 ( \\ & k3\_yellow21 X0 X1)) \wedge ((v4\_orders\_2 (k3\_yellow21 X0 X1)) \wedge ((v5\_orders\_2 \\ & (k3\_yellow21 X0 X1)) \wedge ((v1\_lattice3 (k3\_yellow21 X0 X1)) \wedge ((v2\_lattice3 \\ & (k3\_yellow21 X0 X1)) \wedge (l1\_orders\_2 (k3\_yellow21 X0 X1)))))) \quad (10) \end{aligned}$$

Assume the following.

$$\forall X0.l1\_struct\_0 (k1\_yellow21 X0) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\ & X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 X0) \wedge ((v12\_altcat\_1 X0) \wedge \\ & (l2\_altcat\_1 X0)))))) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge ((m1\_subset\_1 \\ & X2 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X3 (k1\_altcat\_1 X0 X1 X2)))))) \Rightarrow \\ & (m1\_subset\_1 (k1\_altcat\_3 X0 X1 X2 X3) (k1\_altcat\_1 X0 X2 X1)) \quad (12) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.(((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\ & X0) \wedge ((v12\_altcat\_1 X0) \wedge ((v2\_yellow21 X0) \wedge (l2\_altcat\_1 X0)))))) \Rightarrow \\ & (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k3\_yellow21 X0 \\ & X1 = X1)) \quad (13) \end{aligned}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\ X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))))) \Rightarrow (\forall X1.(m1\_subset\_1 \\ X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (k1\_altcat\_1 X0 X1 X2)) \Rightarrow ((v3\_altcat\_3 \\ X3 X0 X1 X2) \Leftrightarrow ((k5\_altcat\_1 X0 X2 X1 X2 (k1\_altcat\_3 X0 X1 X2 X3) X3 = \\ k8\_altcat\_1 X0 X2) \wedge (k5\_altcat\_1 X0 X1 X2 X1 X3 (k1\_altcat\_3 X0 X1 \\ X2 X3) = k8\_altcat\_1 X0 X1)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\forall X0.(l1\_struct\_0 X0) \Rightarrow (k3\_struct\_0 X0 = k6\_partfun1 (u1\_struct\_0 X0)) \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.(l2\_altcat\_1 X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 \\ X0) \wedge ((v11\_altcat\_1 X0) \wedge ((v12\_altcat\_1 X0) \wedge (v2\_yellow21 X0)))))) \Rightarrow \\ ((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 X0) \wedge (( \\ v12\_altcat\_1 X0) \wedge ((v4\_yellow18 X0) \wedge (v1\_yellow21 X0)))))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} \forall X0.(l2\_altcat\_1 X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 \\ X0) \wedge ((v11\_altcat\_1 X0) \wedge ((v12\_altcat\_1 X0) \wedge (v4\_yellow18 X0)))))) \Rightarrow \\ ((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v9\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\ X0) \wedge ((v12\_altcat\_1 X0) \wedge ((v2\_yellow18 X0) \wedge (v3\_yellow18 X0)))))) \end{aligned} \quad (17)$$

Assume the following.

$$\forall X0.(l1\_orders\_2 X0) \Rightarrow ((v1\_lattice3 X0) \Rightarrow (\neg v2\_struct\_0 X0)) \quad (18)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 X0 X1))) \Rightarrow ((v1\_partfun1 X2 X0) \Rightarrow (v1\_funct\_2 X2 X0 X1)) \end{aligned} \quad (19)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 \\ X0) \wedge ((v12\_altcat\_1 X0) \wedge ((v2\_yellow21 X0) \wedge (l2\_altcat\_1 X0)))))) \Rightarrow \\ (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\ X2 (u1\_struct\_0 X0)) \Rightarrow (\neg (k1\_altcat\_1 X0 X1 X2 \neq k1\_xboole\_0) \wedge (( \\ k1\_altcat\_1 X0 X2 X1 \neq k1\_xboole\_0) \wedge (\exists X3.(m1\_subset\_1 X3 \\ (k1\_altcat\_1 X0 X1 X2)) \wedge ((v3\_altcat\_3 X3 X0 X1 X2) \wedge (\neg v23\_waybel\_0 \\ (k5\_yellow21 X0 X1 X2 X3) (k3\_yellow21 X0 X1) (k3\_yellow21 X0 X2)))))))) \end{aligned}$$