

## t1\_functor2

(TMaptWvvnv6KDm3YyMD565MC9trvhRuTgUcx)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $v12\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $l2\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $v15\_functor0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m2\_functor0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k6\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_altcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $v10\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l2\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_functor0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_altcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_altcat\_2 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v12\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v13\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v8\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2\_struct\_0 \\ & X0) \wedge (l1\_altcat\_1 X0)) \wedge (((\neg v2\_struct\_0 X1) \wedge (l1\_altcat\_1 X1)) \wedge \\ & (((v10\_functor0 X2 X0 X1) \wedge (l2\_functor0 X2 X0 X1)) \wedge ((m1\_subset\_1 \\ & X3 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X4 (u1\_struct\_0 X0)))))) \Rightarrow ( \\ & k5\_functor0 X0 X1 X2 X3 X4 = k4\_functor0 X0 X1 X2 X3 X4) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge \\ & ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))) \wedge ((\neg v2\_struct\_0 X1) \wedge \\ & ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 X1)))) \Rightarrow (\forall X2. (m2\_functor0 \\ & X2 X0 X1) \Rightarrow (l2\_functor0 X2 X0 X1)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((l1\_altcat\_1 X0) \wedge (l1\_altcat\_1 X1)) \Rightarrow ( \\ & \forall X2. (l2\_functor0 X2 X0 X1) \Rightarrow (l1\_functor0 X2 X0 X1)) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0. (l2\_altcat\_1 X0) \Rightarrow (l1\_altcat\_1 X0) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge ((v12\_altcat\_1 X0) \wedge \\ & (l2\_altcat\_1 X0))) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow (m1\_subset\_1 \\ & (k8\_altcat\_1 X0 X1) (k1\_altcat\_1 X0 X1 X1)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. (((\neg v2\_struct\_0 \\ & X0) \wedge (l1\_altcat\_1 X0)) \wedge (((\neg v2\_struct\_0 X1) \wedge (l1\_altcat\_1 X1)) \wedge \\ & ((l1\_functor0 X2 X0 X1) \wedge (m1\_subset\_1 X3 (u1\_struct\_0 X0)))) \Rightarrow \\ & (m1\_subset\_1 (k3\_functor0 X0 X1 X2 X3) (u1\_struct\_0 X1)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_altcat\_1 X0)) \Rightarrow ((v1\_altcat\_2 \\ & X0) \Leftrightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k1\_altcat\_1 \\ & X0 X1 X1 \neq k1\_xboole\_0))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 \\ & X0))) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 \\ & X1))) \Rightarrow (\forall X2. (l2\_functor0 X2 X0 X1) \Rightarrow ((v12\_functor0 X2 X0 \\ & X1) \Leftrightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (k1\_funct\_1 \\ & (k4\_functor0 X0 X1 X2 X3 X3) (k8\_altcat\_1 X0 X3) = k8\_altcat\_1 X1 ( \\ & k3\_functor0 X0 X1 X2 X3)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_altcat\_1 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge (l1\_altcat\_1 X1)) \Rightarrow (\forall X2. ((v10\_functor0 \\ & X2 X0 X1) \wedge (l2\_functor0 X2 X0 X1)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 ( \\ & u1\_struct\_0 X0)) \Rightarrow (\forall X4. (m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\ & (\neg (k1\_altcat\_1 X0 X3 X4 \neq k1\_xboole\_0) \wedge ((k1\_altcat\_1 X1 (k3\_functor0 \\ & X0 X1 X2 X3) (k3\_functor0 X0 X1 X2 X4) \neq k1\_xboole\_0) \wedge (\neg \forall X5. \\ & (m1\_subset\_1 X5 (k1\_altcat\_1 X0 X3 X4)) \Rightarrow (k6\_functor0 X0 X1 X2 X3 \\ & X4 X5 = k1\_funct\_1 (k5\_functor0 X0 X1 X2 X3 X4) X5)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge \\ & ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))) \wedge ((\neg v2\_struct\_0 X1) \wedge \\ & ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 X1)))) \Rightarrow (\forall X2. (m2\_functor0 \\ & X2 X0 X1) \Rightarrow ((v15\_functor0 X2 X0 X1) \Rightarrow ((v10\_functor0 X2 X0 X1) \wedge (v13\_functor0 \\ & X2 X0 X1)))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.(l2\_altcat\_1 X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v12\_altcat\_1 X0)) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge (v1\_altcat\_2 X0))) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge \\ & ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))) \wedge ((\neg v2\_struct\_0 X1) \wedge \\ & ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 X1)))) \Rightarrow (\forall X2.(m2\_functor0 \\ & X2 X0 X1) \Rightarrow ((v8\_functor0 X2 X0 X1) \wedge (v12\_functor0 X2 X0 X1))) \end{aligned} \quad (12)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v12\_altcat\_1 \\ & X0) \wedge (l2\_altcat\_1 X0)))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_altcat\_1 \\ & X1) \wedge ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 X1)))) \Rightarrow (\forall X2.((v15\_functor0 \\ & X2 X0 X1) \wedge (m2\_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 ( \\ & u1\_struct\_0 X0) \Rightarrow (k6\_functor0 X0 X1 X2 X3 X3 (k8\_altcat\_1 X0 X3) = \\ & k8\_altcat\_1 X1 (k3\_functor0 X0 X1 X2 X3)))))) \end{aligned}$$