

# l38\_cfuncdom

(TMWhjU6uuPTRot4T4QQu4bnYH1EJpBxpkww)

October 27, 2020

Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k8\_cfuncdom : \iota \Rightarrow \iota$  be given. Let  $k5\_cfuncdom : \iota \Rightarrow \iota$  be given. Let  $k6\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_numbers : \iota$  be given. Let  $k9\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funcsdom : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_cfuncdom : \iota \Rightarrow \iota$  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  $m1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $g1\_cfuncdom : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l3\_struct\_0 : \iota \Rightarrow o$  be given. Let  $u3\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $u2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $l3\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $u2\_algstr\_0 : \iota \Rightarrow \iota$  be given. Let  $l1\_clvect\_1 : \iota \Rightarrow o$  be given. Let  $u1\_clvect\_1 : \iota \Rightarrow \iota$  be given. Let  $l1\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $u1\_algstr\_0 : \iota \Rightarrow \iota$  be given. Let  $l6\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l5\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l4\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l4\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_cfuncdom : \iota \Rightarrow o$  be given. Let  $v1\_cfuncdom : \iota \Rightarrow o$  be given. Let  $k1\_cfuncdom : \iota \Rightarrow \iota$  be given. Let  $k3\_cfuncdom : \iota \Rightarrow \iota$  be given. Let  $k4\_cfuncdom : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m2\_funct\_2 X1 X0 k2\_numbers \\ & (k9\_funct\_2 X0 k2\_numbers) \Rightarrow (r2\_funct\_2 X0 k2\_numbers (k1\_funcsdom \\ & X0 k2\_numbers (k2\_cfuncdom X0) (k5\_cfuncdom X0) X1) X1)) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m2\_funct\_2 X1 X0 k2\_numbers \\ & (k9\_funct\_2 X0 k2\_numbers) \Rightarrow (\forall X2. (m2\_funct\_2 X2 X0 k2\_numbers \\ & (k9\_funct\_2 X0 k2\_numbers) \Rightarrow (r2\_funct\_2 X0 k2\_numbers (k1\_funcsdom \\ & X0 k2\_numbers (k2\_cfuncdom X0) X1 X2) (k1\_funcsdom X0 k2\_numbers \\ & (k2\_cfuncdom X0) X2 X1)))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X2)\wedge \\ & ((v1\_funct\_2 X2 X0 X1)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X1)))))\wedge((v1\_funct\_1 X3)\wedge((v1\_funct\_2 X3 X0 X1)\wedge(m1\_subset\_1 \\ & X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))))))\Rightarrow((r2\_funct\_2 X0 X1 X2 \\ & X3)\Leftrightarrow(X2 = X3)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X1)\wedge(m1\_funct\_2 \\ & X2 X0 X1))\Rightarrow(\forall X3.(m2\_funct\_2 X3 X0 X1 X2)\Leftrightarrow(m1\_subset\_1 X3 \\ & X2)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X1)\wedge \\ & ((v1\_funct\_2 X1 (k2\_zfmisc\_1 X0 X0) X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))))\wedge((m1\_subset\_1 X2 X0)\wedge \\ & (m1\_subset\_1 X3 X0)))\Rightarrow(k5\_binop\_1 X0 X1 X2 X3 = k1\_binop\_1 X1 X2 X3) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1\_xboole\_0 \\ & X1)\wedge(((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 (k2\_zfmisc\_1 (k9\_funct\_2 \\ & X0 X1) (k9\_funct\_2 X0 X1)) (k9\_funct\_2 X0 X1))\wedge(m1\_subset\_1 X2 ( \\ & k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k9\_funct\_2 X0 X1) (k9\_funct\_2 \\ & X0 X1)) (k9\_funct\_2 X0 X1))))))\wedge((m1\_subset\_1 X3 (k9\_funct\_2 X0 \\ & X1))\wedge(m1\_subset\_1 X4 (k9\_funct\_2 X0 X1))))))\Rightarrow(k1\_funcsdm X0 X1 \\ & X2 X3 X4 = k1\_binop\_1 X2 X3 X4) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\ & (((v1\_funct\_1 X1)\wedge((v1\_funct\_2 X1 (k2\_zfmisc\_1 X0 X0) X0)\wedge(m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))))\wedge(((v1\_funct\_1 \\ & X2)\wedge((v1\_funct\_2 X2 (k2\_zfmisc\_1 X0 X0) X0)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))))\wedge(((v1\_funct\_1 X3)\wedge( \\ & (v1\_funct\_2 X3 (k2\_zfmisc\_1 k2\_numbers X0) X0)\wedge(m1\_subset\_1 X3 \\ & (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 k2\_numbers X0) X0)))))\wedge \\ & ((m1\_subset\_1 X4 X0)\wedge(m1\_subset\_1 X5 X0))))))\Rightarrow(\forall X6.\forall X7. \\ & \forall X8.\forall X9.\forall X10.\forall X11.(g1\_cfundom X0 \\ & X1 X2 X3 X4 X5 = g1\_cfundom X6 X7 X8 X9 X10 X11)\Rightarrow((X0 = X6)\wedge((X1 = X7)\wedge \\ & ((X2 = X8)\wedge((X3 = X9)\wedge((X4 = X10)\wedge(X5 = X11)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\neg v1\_xboole\_0 k2\_numbers \quad (8)$$

Assume the following.

$$\forall X0.(l3\_struct\_0 X0) \Rightarrow (m1\_subset\_1 (u3\_struct\_0 X0) (u1\_struct\_0 X0)) \quad (9)$$

Assume the following.

$$\forall X0.(l2\_struct\_0 X0) \Rightarrow (m1\_subset\_1 (u2\_struct\_0 X0) (u1\_struct\_0 X0)) \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3\_algstr\_0 X0) \Rightarrow & ((v1\_funct\_1 (u2\_algstr\_0 X0)) \wedge \\ & ((v1\_funct\_2 (u2\_algstr\_0 X0) (k2\_zfmisc\_1 (u1\_struct\_0 X0) ( \\ & u1\_struct\_0 X0)) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 (u2\_algstr\_0 \\ & X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) ( \\ & u1\_struct\_0 X0)) (u1\_struct\_0 X0)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_clvect\_1 X0) \Rightarrow & ((v1\_funct\_1 (u1\_clvect\_1 X0)) \wedge \\ & ((v1\_funct\_2 (u1\_clvect\_1 X0) (k2\_zfmisc\_1 k2\_numbers (u1\_struct\_0 \\ & X0)) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 (u1\_clvect\_1 X0) (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k2\_zfmisc\_1 k2\_numbers (u1\_struct\_0 X0)) (u1\_struct\_0 \\ & X0)))))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_algstr\_0 X0) \Rightarrow & ((v1\_funct\_1 (u1\_algstr\_0 X0)) \wedge \\ & ((v1\_funct\_2 (u1\_algstr\_0 X0) (k2\_zfmisc\_1 (u1\_struct\_0 X0) ( \\ & u1\_struct\_0 X0)) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 (u1\_algstr\_0 \\ & X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) ( \\ & u1\_struct\_0 X0)) (u1\_struct\_0 X0)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X1) \wedge (m1\_funct\_2 \\ X2 X0 X1)) \Rightarrow & (\forall X3.(m2\_funct\_2 X3 X0 X1 X2) \Rightarrow ((v1\_funct\_1 X3) \wedge \\ & ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X1)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\forall X0.(l6\_algstr\_0 X0) \Rightarrow ((l2\_algstr\_0 X0) \wedge (l5\_algstr\_0 X0)) \quad (15)$$

Assume the following.

$$\forall X0.(l5\_algstr\_0 X0) \Rightarrow ((l4\_algstr\_0 X0) \wedge (l4\_struct\_0 X0)) \quad (16)$$

Assume the following.

$$\forall X0.(l4\_algstr\_0 X0) \Rightarrow ((l3\_struct\_0 X0) \wedge (l3\_algstr\_0 X0)) \quad (17)$$

Assume the following.

$$\forall X0.(l2\_algstr\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l1\_algstr\_0 X0)) \quad (18)$$

Assume the following.

$$\forall X0.(l1\_cfunclom X0) \Rightarrow ((l6\_algstr\_0 X0) \wedge (l1\_clvect\_1 X0)) \quad (19)$$

Assume the following.

$$\forall X0.\forall X1.(\neg v1\_xboole\_0 X1) \Rightarrow (m1\_funct\_2 (k9\_funct\_2 X0 X1) X0 X1) \quad (20)$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow ((v1\_cfunclom (k8\_cfunclom X0)) \wedge (l1\_cfunclom (k8\_cfunclom X0))) \quad (21)$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (m2\_funct\_2 (k5\_cfunclom X0) X0 k2\_numbers (k9\_funct\_2 X0 k2\_numbers)) \quad (22)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X1) \wedge \\ & ((v1\_funct\_2 X1 (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))) \wedge ((m1\_subset\_1 X2 X0) \wedge \\ & (m1\_subset\_1 X3 X0))) \Rightarrow (m1\_subset\_1 (k5\_binop\_1 X0 X1 X2 X3) X0) \end{aligned} \quad (23)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow ((v1\_funct\_1 (k2\_cfunclom X0)) \wedge \\ & ((v1\_funct\_2 (k2\_cfunclom X0) (k2\_zfmisc\_1 (k9\_funct\_2 X0 k2\_numbers) \\ & (k9\_funct\_2 X0 k2\_numbers)) (k9\_funct\_2 X0 k2\_numbers)) \wedge (m1\_subset\_1 \\ & (k2\_cfunclom X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k9\_funct\_2 \\ & X0 k2\_numbers) (k9\_funct\_2 X0 k2\_numbers)) (k9\_funct\_2 X0 k2\_numbers)))))) \end{aligned} \quad (24)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (k8\_cfunclom X0 = g1\_cfunclom (k9\_funct\_2 \\ & X0 k2\_numbers) (k2\_cfunclom X0) (k1\_cfunclom X0) (k3\_cfunclom \\ & X0) (k5\_cfunclom X0) (k4\_cfunclom X0)) \end{aligned} \quad (25)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3\_algstr\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (k6\_algstr\_0 \\ X0 X1 X2 = k5\_binop\_1 (u1\_struct\_0 X0) (u2\_algstr\_0 X0) X1 X2))) \end{aligned} \quad (26)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_cfunctor\_0 X0) \Rightarrow ((v1\_cfunctor\_0 X0) \Rightarrow (X0 = g1\_cfunctor\_0 \\ (u1\_struct\_0 X0) (u2\_algstr\_0 X0) (u1\_algstr\_0 X0) (u1\_clvect\_1 \\ X0) (u3\_struct\_0 X0) (u2\_struct\_0 X0))) \end{aligned} \quad (27)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ (k8\_cfunctor\_0 X0))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ (k8\_cfunctor\_0 X0))) \Rightarrow ((X2 = k5\_cfunctor\_0 X0) \Rightarrow ((k6\_algstr\_0 (k8\_cfunctor\_0 \\ X0) X2 X1 = X1) \wedge (k6\_algstr\_0 (k8\_cfunctor\_0 X0) X1 X2 = X1)))))) \end{aligned}$$