

## t26\_closure2

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_partfun1 : \iota \Rightarrow \iota$  be given. Let  $k6\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v7\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_relat\_1 : \iota \Rightarrow \iota$  be given. Let  $r2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v4\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v2\_card\_3 : \iota \Rightarrow o$  be given. Let  $m3\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v5\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v6\_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (k1\_funct\_1 (k4\_relat\_1 X1) X0 = X0) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0)))) \wedge ((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))))) \Rightarrow (r2\_pboole X0 X1 X1) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0)))) \wedge ((\neg v1\_xboole\_0 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k1\_closure2 X0 X1)))))) \Rightarrow (\forall X3. (m1\_closure2 X3 X0 X1 X2) \Leftrightarrow (m1\_subset\_1 X3 X2)) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_relat\_1 X1)\wedge \\ & ((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge \\ & (((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 (k6\_closure2 X0 X1) (k6\_closure2 \\ & X0 X1))\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k6\_closure2 \\ & X0 X1) (k6\_closure2 X0 X1))))))\wedge(m1\_subset\_1 X3 (k6\_closure2 X0 \\ & X1))))\Rightarrow(k7\_closure2 X0 X1 X2 X3 = k1\_funct\_1 X2 X3) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.k6\_partfun1 X0 = k4\_relat\_1 X0 \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow(k6\_closure2 X0 X1 = k1\_closure2 \\ & X0 X1) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow((\neg v1\_xboole\_0 (k1\_closure2 \\ & X0 X1))\wedge((v4\_funct\_1 (k1\_closure2 X0 X1))\wedge(v2\_card\_3 (k1\_closure2 \\ & X0 X1)))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_relat\_1 (k4\_relat\_1 X0))\wedge((v4\_relat\_1 (k4\_relat\_1 \\ & X0) X0)\wedge((v1\_funct\_1 (k4\_relat\_1 X0))\wedge(v1\_partfun1 (k4\_relat\_1 \\ & X0) X0))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow(\forall X2.(m3\_pboole \\ & X2 X0 X1)\Rightarrow((v1\_relat\_1 X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge \\ & (v1\_partfun1 X2 X0)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 \\ & X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge((\neg v1\_xboole\_0 \\ & X2)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k1\_closure2 X0 X1))))))\Rightarrow(\forall X3. \\ & (m1\_closure2 X3 X0 X1 X2)\Rightarrow(m3\_pboole X3 X0 X1)) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_partfun1 (k6\_partfun1 X0) X0)\wedge(m1\_subset\_1 (k6\_partfun1 \\ & X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow((v1\_closure2 (k6\_closure2 \\ & X0 X1) X0 X1)\wedge((v2\_closure2 (k6\_closure2 X0 X1) X0 X1)\wedge((v3\_closure2 \\ & (k6\_closure2 X0 X1) X0 X1)\wedge((v4\_closure2 (k6\_closure2 X0 X1) X0 \\ & X1)\wedge((v5\_closure2 (k6\_closure2 X0 X1) X0 X1)\wedge((v6\_closure2 (k6\_closure2 \\ & X0 X1) X0 X1)\wedge(m1\_subset\_1 (k6\_closure2 X0 X1) (k1\_zfmisc\_1 (k1\_closure2 \\ & X0 X1)))))))))) \end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1\_funct\_1 \\ & X2)\wedge((v1\_funct\_2 X2 (k6\_closure2 X0 X1) (k6\_closure2 X0 X1))\wedge( \\ & m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k6\_closure2 X0 X1) ( \\ & k6\_closure2 X0 X1))))))\Rightarrow((v7\_closure2 X2 X0 X1)\Leftrightarrow(\forall X3.( \\ & m1\_closure2 X3 X0 X1 (k6\_closure2 X0 X1))\Rightarrow(r2\_pboole X0 X3 (k7\_closure2 \\ & X0 X1 X2 X3)))))) \end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1)))\Rightarrow((v1\_partfun1 X2 X0)\Rightarrow(v1\_funct\_2 X2 X0 X1)) \end{aligned} \tag{15}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow((v1\_funct\_1 (k6\_partfun1 \\ & (k6\_closure2 X0 X1)))\wedge((v1\_funct\_2 (k6\_partfun1 (k6\_closure2 \\ & X0 X1) (k6\_closure2 X0 X1) (k6\_closure2 X0 X1))\wedge((v7\_closure2 \\ & (k6\_partfun1 (k6\_closure2 X0 X1) X0 X1)\wedge(m1\_subset\_1 (k6\_partfun1 \\ & (k6\_closure2 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k6\_closure2 X0 \\ & X1) (k6\_closure2 X0 X1)))))))))) \end{aligned}$$