

## t20\_rfunct\_3

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October 27, 2020

Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_rfunct\_3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_numbers : \iota$  be given. Let  $m2\_rfunct\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k14\_rfunct\_3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k12\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_rfunct\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_setwiseo : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $k3\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_finsop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k13\_rfunct\_3 : \iota \Rightarrow \iota$  be given. Let  $m1\_rfunct\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 X0) \Rightarrow \\ & \quad (\forall X2. (m2\_finseq\_1 X2 X0) \Rightarrow (\forall X3. ((v1\_funct\_1 X3) \wedge \\ & \quad ((v1\_funct\_2 X3 (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 \\ & \quad (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))))) \Rightarrow (((v1\_setwiseo X3 X0) \vee \\ & \quad (r1\_xxreal\_0 np\_1 (k3\_finseq\_1 X2))) \Rightarrow (k1\_finsop\_1 X0 (k8\_finseq\_1 \\ & \quad X0 X2 (k12\_finseq\_1 X0 X1) X3 = k5\_binop\_1 X0 X3 (k1\_finsop\_1 X0 X2 \\ & \quad X3) X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (v1\_setwiseo (k13\_rfunct\_3 X0) (k3\_rfunct\_3 X0 k1\_numbers)) \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((m1\_subset\_1 X2 \\ & (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1)))) \Rightarrow (r2\_relset\_1 X0 X1 X2 X2) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X2)\wedge(m1\_rfunc\_3 X2 X0 X1))\Rightarrow(\forall X3.(m2\_rfunc\_3 X3 X0 X1 X2)\Leftrightarrow(m1\_subset\_1 X3 X2)) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.(m2\_finseq\_1 X1 X0)\Leftrightarrow(m1\_finseq\_1 X1 X0) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.k3\_rfunc\_3 X0 X1 = k4\_partfun1 X0 X1 \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\neg v1\_xboole\_0 (k4\_partfun1 X0 X1) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X2)\wedge(m1\_rfunc\_3 X2 X0 X1))\Rightarrow(\forall X3.(m2\_rfunc\_3 X3 X0 X1 X2)\Rightarrow((v1\_funct\_1 X3)\wedge(m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_finseq\_1 X1 X0)\wedge(m1\_finseq\_1 X2 X0))\Rightarrow(m2\_finseq\_1 (k8\_finseq\_1 X0 X1 X2) X0) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.m1\_rfunc\_3 (k3\_rfunc\_3 X0 X1) X0 X1 \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge(m1\_finseq\_1 X1 (k3\_rfunc\_3 X0 k1\_numbers)))\Rightarrow(m2\_rfunc\_3 (k14\_rfunc\_3 X0 X1) X0 k1\_numbers (k3\_rfunc\_3 X0 k1\_numbers)) \quad (11)$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(((v1\_funct\_1 (k13\_rfunc\_3 X0))\wedge((v1\_funct\_2 (k13\_rfunc\_3 X0) (k2\_zfmisc\_1 (k3\_rfunc\_3 X0 k1\_numbers) (k3\_rfunc\_3 X0 k1\_numbers)) (k3\_rfunc\_3 X0 k1\_numbers))\wedge(m1\_subset\_1 (k13\_rfunc\_3 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k3\_rfunc\_3 X0 k1\_numbers) (k3\_rfunc\_3 X0 k1\_numbers)) (k3\_rfunc\_3 X0 k1\_numbers)))))) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X1 X0))\Rightarrow(m2\_finseq\_1 (k12\_finseq\_1 X0 X1) X0) \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m2\_finseq\_1 X1 (k3\_rfunct\_3 \\ X0 k1\_numbers)) \Rightarrow (k14\_rfunct\_3 X0 X1 = k1\_finsop\_1 (k3\_rfunct\_3 \\ X0 k1\_numbers) X1 (k13\_rfunct\_3 X0))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\ v1\_funct\_2 X1 (k2\_zfmisc\_1 (k3\_rfunct\_3 X0 k1\_numbers) (k3\_rfunct\_3 \\ X0 k1\_numbers)) (k3\_rfunct\_3 X0 k1\_numbers)) \wedge (m1\_subset\_1 X1 \\ (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k3\_rfunct\_3 X0 k1\_numbers) \\ (k3\_rfunct\_3 X0 k1\_numbers)) (k3\_rfunct\_3 X0 k1\_numbers)))))) \Rightarrow \\ ((X1 = k13\_rfunct\_3 X0) \Leftrightarrow (\forall X2.(m2\_rfunct\_3 X2 X0 k1\_numbers \\ (k3\_rfunct\_3 X0 k1\_numbers)) \Rightarrow (\forall X3.(m2\_rfunct\_3 X3 X0 k1\_numbers \\ (k3\_rfunct\_3 X0 k1\_numbers)) \Rightarrow (k5\_binop\_1 (k3\_rfunct\_3 X0 k1\_numbers) \\ X1 X2 X3 = k5\_rfunct\_3 X0 k1\_numbers X2 X3)))))) \end{aligned} \quad (15)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m2\_finseq\_1 X1 (k3\_rfunct\_3 \\ X0 k1\_numbers)) \Rightarrow (\forall X2.(m2\_rfunct\_3 X2 X0 k1\_numbers (k3\_rfunct\_3 \\ X0 k1\_numbers)) \Rightarrow (r2\_relset\_1 X0 k1\_numbers (k14\_rfunct\_3 X0 ( \\ k8\_finseq\_1 (k3\_rfunct\_3 X0 k1\_numbers) X1 (k12\_finseq\_1 (k3\_rfunct\_3 \\ X0 k1\_numbers) X2))) (k5\_rfunct\_3 X0 k1\_numbers (k14\_rfunct\_3 \\ X0 X1) X2)))))) \end{aligned}$$