

# t5\_gfacirc1 (TMJEtMDi- vsYas7NGTEpjRVqa5DoW17KPRDy)

October 27, 2020

Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_margrel1 : \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_gfacirc1 : \iota$  be given. Let  $k9\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k14\_twoscomp : \iota$  be given. Let  $k10\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k15\_twoscomp : \iota$  be given. Let  $k4\_gfacirc1 : \iota$  be given. Let  $k10\_binarith : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboolean : \iota \Rightarrow o$  be given. Let  $k3\_xboolean : \iota \Rightarrow \iota$  be given. Let  $k10\_xboolean : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_binarith : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_margrel1 : \iota \Rightarrow \iota$  be given. Let  $k8\_twoscomp : \iota$  be given. Let  $k4\_twoscomp : \iota$  be given. Let  $k2\_twoscomp : \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k5\_twoscomp : \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $k5\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  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  $k4\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_2 : \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.(v1\_xboolean X0) \Rightarrow (\forall X1.(v1\_xboolean X1) \Rightarrow (k3\_xboolean \\ (k10\_xboolean X0 X1) = k10\_xboolean (k3\_xboolean X0) X1)) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_subset\_1 X0 k6\_margrel1) \Rightarrow (\forall X1.(m1\_subset\_1 \\ X1 k6\_margrel1) \Rightarrow ((k1\_funct\_1 k4\_gfacirc1 (k10\_finseq\_1 X0 X1) = \\ k2\_binarith X0 (k9\_margrel1 X1)) \wedge ((k1\_funct\_1 k4\_gfacirc1 (k10\_finseq\_1 \\ X0 X1) = k1\_funct\_1 k15\_twoscomp (k10\_finseq\_1 X0 X1)) \wedge ((k1\_funct\_1 \\ k4\_gfacirc1 (k10\_finseq\_1 X0 X1) = k1\_funct\_1 k8\_twoscomp (k10\_finseq\_1 \\ (k1\_funct\_1 k4\_twoscomp (k10\_finseq\_1 X0 X1)) (k1\_funct\_1 k2\_twoscomp \\ (k10\_finseq\_1 X0 X1)))) \wedge ((k1\_funct\_1 k4\_gfacirc1 (k10\_finseq\_1 \\ k6\_numbers k6\_numbers) = np\_1) \wedge ((k1\_funct\_1 k4\_gfacirc1 (k10\_finseq\_1 \\ k6\_numbers np\_1) = k6\_numbers) \wedge ((k1\_funct\_1 k4\_gfacirc1 (k10\_finseq\_1 \\ np\_1 k6\_numbers) = k6\_numbers) \wedge (k1\_funct\_1 k4\_gfacirc1 (k10\_finseq\_1 \\ np\_1 np\_1) = np\_1)))))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_subset\_1 X0 k6\_margrel1) \Rightarrow & ((k1\_funct\_1 k1\_gfacirc1 \\ & (k10\_binarith k6\_margrel1 X0) = k9\_margrel1 X0) \wedge ((k1\_funct\_1 \\ & k1\_gfacirc1 (k10\_binarith k6\_margrel1 X0) = k1\_funct\_1 k5\_twoscomp \\ & (k10\_finseq\_1 X0 X0)) \wedge ((k1\_funct\_1 k1\_gfacirc1 (k10\_binarith \\ & k5\_numbers k6\_numbers) = np\_1) \wedge (k1\_funct\_1 k1\_gfacirc1 (k10\_binarith \\ & k5\_numbers np\_1) = k6\_numbers)))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k6\_margrel1) \Rightarrow (k9\_margrel1 X0 = k3\_xboolean X0) \quad (4)$$

Assume the following.

$$\forall X0.k9\_finseq\_1 X0 = k5\_finseq\_1 X0 \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 k6\_margrel1)) \Rightarrow (k2\_binarith X0 X1 = k10\_xboolean X0 X1) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge (m1\_subset\_1 X1 X0)) \Rightarrow (k10\_binarith X0 X1 = k5\_finseq\_1 X1) \quad (7)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k6\_margrel1) \Rightarrow (k9\_margrel1 (k9\_margrel1 X0) = X0) \quad (8)$$

Assume the following.

$$\neg v1\_xboole\_0 k6\_margrel1 \quad (9)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k6\_margrel1) \Rightarrow (m1\_subset\_1 (k9\_margrel1 X0) k6\_margrel1) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 k6\_margrel1)) \Rightarrow (m1\_subset\_1 (k2\_binarith X0 X1) k6\_margrel1) \quad (11)$$

Assume the following.

$$\begin{aligned} (v1\_funct\_1 k15\_twoscomp) \wedge ((v1\_funct\_2 k15\_twoscomp (k4\_finseq\_2 \\ np\_2 k6\_margrel1) k6\_margrel1) \wedge (m1\_subset\_1 k15\_twoscomp ( \\ k1\_zfmisc\_1 (k2\_zfmisc\_1 (k4\_finseq\_2 np\_2 k6\_margrel1) k6\_margrel1)))) \end{aligned} \quad (12)$$

Assume the following.

$$(v1\_funct\_1\ k14\_twoscomp) \wedge ((v1\_funct\_2\ k14\_twoscomp\ (k4\_finseq\_2\ np\_2\ k6\_margrel1)\ k6\_margrel1) \wedge (m1\_subset\_1\ k14\_twoscomp\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k4\_finseq\_2\ np\_2\ k6\_margrel1)\ k6\_margrel1)))) \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0. ((v1\_funct\_1\ X0) \wedge ((v1\_funct\_2\ X0\ (k4\_finseq\_2\ np\_2\ k6\_margrel1)\ k6\_margrel1) \wedge (m1\_subset\_1\ X0\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k4\_finseq\_2\ np\_2\ k6\_margrel1)\ k6\_margrel1)))))) \Rightarrow ((X0 = k15\_twoscomp) \Leftrightarrow \\ (\forall X1. (m1\_subset\_1\ X1\ k6\_margrel1) \Rightarrow (\forall X2. (m1\_subset\_1\ X2\ k6\_margrel1) \Rightarrow (k1\_funct\_1\ X0\ (k10\_finseq\_1\ X1\ X2) = k2\_binarith\ (k9\_margrel1\ X1\ X2)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0. ((v1\_funct\_1\ X0) \wedge ((v1\_funct\_2\ X0\ (k4\_finseq\_2\ np\_2\ k6\_margrel1)\ k6\_margrel1) \wedge (m1\_subset\_1\ X0\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k4\_finseq\_2\ np\_2\ k6\_margrel1)\ k6\_margrel1)))))) \Rightarrow ((X0 = k14\_twoscomp) \Leftrightarrow \\ (\forall X1. (m1\_subset\_1\ X1\ k6\_margrel1) \Rightarrow (\forall X2. (m1\_subset\_1\ X2\ k6\_margrel1) \Rightarrow (k1\_funct\_1\ X0\ (k10\_finseq\_1\ X1\ X2) = k2\_binarith\ X1\ X2)))))) \end{aligned} \quad (15)$$

Assume the following.

$$\forall X0. (m1\_subset\_1\ X0\ k6\_margrel1) \Rightarrow (v1\_xboolean\ X0) \quad (16)$$

**Theorem 1**

$$\begin{aligned} \forall X0. (m1\_subset\_1\ X0\ k6\_margrel1) \Rightarrow (\forall X1. (m1\_subset\_1\ X1\ k6\_margrel1) \Rightarrow ((k1\_funct\_1\ k1\_gfacirc1\ (k9\_finseq\_1\ (k1\_funct\_1\ k14\_twoscomp\ (k10\_finseq\_1\ X0\ X1))) = k1\_funct\_1\ k15\_twoscomp\ (k10\_finseq\_1\ X0\ X1)) \wedge ((k1\_funct\_1\ k1\_gfacirc1\ (k9\_finseq\_1\ (k1\_funct\_1\ k14\_twoscomp\ (k10\_finseq\_1\ X0\ X1))) = k1\_funct\_1\ k4\_gfacirc1\ (k10\_finseq\_1\ X0\ X1)) \wedge (k1\_funct\_1\ k14\_twoscomp\ (k10\_finseq\_1\ (k1\_funct\_1\ k1\_gfacirc1\ (k10\_binarith\ k6\_margrel1\ X0))\ (k1\_funct\_1\ k1\_gfacirc1\ (k10\_binarith\ k6\_margrel1\ X1)))) = k1\_funct\_1\ k14\_twoscomp\ (k10\_finseq\_1\ X0\ X1)))))) \end{aligned}$$