

# l17\_fscirc\_1

(TMWRR7wLyVTg8nQUhQk1EaLmAzzaPoThdyv)

October 27, 2020

Let  $v1\_xtuple\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_card\_3 : \iota \Rightarrow \iota$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_fscirc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_fscirc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_margrel1 : \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_circuit2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_twoscomp : \iota$  be given. Let  $k10\_margrel1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_margrel1 : \iota \Rightarrow \iota$  be given. Let  $k2\_twoscomp : \iota$  be given. Let  $k3\_msafree2 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_msafree2 : \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $v4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_msafree2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_circcomb : \iota \Rightarrow o$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v2\_circcomb : \iota \Rightarrow o$  be given. Let  $v3\_circcomb : \iota \Rightarrow o$  be given. Let  $v4\_circcomb : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v6\_circcomb : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $k3\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_twoscomp : \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v4\_funct\_1 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l2\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l5\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_msualg\_1 : \iota \Rightarrow o$  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  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (k4\_tarski (k10\_finseq\_1 X0 \\ & X1) k3\_twoscomp \in k3\_msafree2 (k4\_fscirc\_1 X0 X1 X2)) \wedge ((k4\_tarski \\ & (k10\_finseq\_1 X1 X2) k2\_twoscomp \in k3\_msafree2 (k4\_fscirc\_1 X0 \\ & X1 X2)) \wedge (k4\_tarski (k10\_finseq\_1 X0 X2) k3\_twoscomp \in k3\_msafree2 \\ & (k4\_fscirc\_1 X0 X1 X2))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(X0 \in u1\_struct\_0 (k4\_fscirc\_1 X0 X1 X2)) \wedge ((X1 \in u1\_struct\_0 (k4\_fscirc\_1 X0 X1 X2)) \wedge (X2 \in u1\_struct\_0 (k4\_fscirc\_1 X0 X1 X2))) \quad (2)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_msafree2 X0) \wedge (l1\_msualg\_1 X0)))) \Rightarrow (\forall X1.((v4\_msualg\_1 X1 X0) \wedge ((v4\_msafree2 X1 X0) \wedge (l3\_msualg\_1 X1 X0)))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k4\_card\_3 (u3\_msualg\_1 X0 X1))) \Rightarrow (k1\_relset\_1 (u1\_struct\_0 X0) X2 = u1\_struct\_0 X0)) \quad (3)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v1\_circcomb X0) \wedge (l1\_msualg\_1 X0))) \Rightarrow (k3\_msafree2 X0 = u4\_struct\_0 X0) \quad (4)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v1\_circcomb X0) \wedge ((v2\_circcomb X0) \wedge ((v3\_circcomb X0) \wedge (l1\_msualg\_1 X0)))))) \Rightarrow (\forall X1.((v4\_msualg\_1 X1 X0) \wedge ((v4\_msafree2 X1 X0) \wedge ((v4\_circcomb X1 X0) \wedge ((v6\_circcomb X1 X0) \wedge (l3\_msualg\_1 X1 X0)))))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k4\_card\_3 (u3\_msualg\_1 X0 X1))) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge ((v1\_funct\_1 X3) \wedge (v1\_finseq\_1 X3))) \Rightarrow (\forall X4.((v1\_relat\_1 X4) \wedge (v1\_funct\_1 X4)) \Rightarrow ((k4\_tarski X3 X4 \in u4\_struct\_0 X0) \Rightarrow (k1\_funct\_1 (k6\_circuit2 X0 X1 X2) (k4\_tarski X3 X4) = k1\_funct\_1 X4 (k3\_relat\_1 X3 X2))))))) \quad (5)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k6\_margrel1) \Rightarrow (\forall X1.(m1\_subset\_1 X1 k6\_margrel1) \Rightarrow ((k1\_funct\_1 k2\_twoscomp (k10\_finseq\_1 X0 X1) = k10\_margrel1 X0 X1) \wedge ((k1\_funct\_1 k3\_twoscomp (k10\_finseq\_1 X0 X1) = k10\_margrel1 (k9\_margrel1 X0) X1) \wedge (k1\_funct\_1 k4\_twoscomp (k10\_finseq\_1 X0 X1) = k10\_margrel1 (k9\_margrel1 X0) (k9\_margrel1 X1)))))) \quad (6)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.\forall X2.((X1 \in k9\_xtuple\_0 X0) \wedge (X2 \in k9\_xtuple\_0 X0)) \Rightarrow (k3\_relat\_1 (k10\_finseq\_1 X1 X2) X0 = k10\_finseq\_1 (k1\_funct\_1 X0 X1) (k1\_funct\_1 X0 X2))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X1) \wedge (v4\_relat\_1 X1 X0)) \Rightarrow (k1\_relset\_1 X0 X1 = k9\_xtuple\_0 X1) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.(v1\_relat\_1 (k10\_finseq\_1 X0 X1))\wedge(v1\_funct\_1 (k10\_finseq\_1 X0 X1)) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.v1\_relat\_1 (k2\_zfmisc\_1 X0 X1) \quad (10)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0)\wedge(v1\_funct\_1 X0))\Rightarrow(v4\_funct\_1 (k4\_card\_3 X0)) \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((l1\_struct\_0 X0)\wedge((v4\_msualg\_1 X1 X0)\wedge \\ (l2\_msualg\_1 X1 X0)))\Rightarrow((v1\_relat\_1 (u3\_msualg\_1 X0 X1))\wedge((v2\_relat\_1 \\ (u3\_msualg\_1 X0 X1))\wedge((v4\_relat\_1 (u3\_msualg\_1 X0 X1) (u1\_struct\_0 \\ X0))\wedge((v1\_funct\_1 (u3\_msualg\_1 X0 X1))\wedge(v1\_partfun1 (u3\_msualg\_1 \\ X0 X1) (u1\_struct\_0 X0)))))) \quad (12) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.v1\_finseq\_1 (k10\_finseq\_1 X0 X1) \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((l1\_struct\_0 X0)\wedge(l2\_msualg\_1 X1 X0))\Rightarrow \\ ((v1\_relat\_1 (u3\_msualg\_1 X0 X1))\wedge((v4\_relat\_1 (u3\_msualg\_1 \\ X0 X1) (u1\_struct\_0 X0))\wedge((v1\_funct\_1 (u3\_msualg\_1 X0 X1))\wedge(v1\_partfun1 \\ (u3\_msualg\_1 X0 X1) (u1\_struct\_0 X0)))))) \quad (14) \end{aligned}$$

Assume the following.

$$\forall X0.(l5\_struct\_0 X0)\Rightarrow(l1\_struct\_0 X0) \quad (15)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge(l1\_msualg\_1 X0))\Rightarrow(\forall X1. (l3\_msualg\_1 X1 X0)\Rightarrow(l2\_msualg\_1 X1 X0)) \quad (16)$$

Assume the following.

$$\forall X0.(l1\_msualg\_1 X0)\Rightarrow(l5\_struct\_0 X0) \quad (17)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(v3\_msualg\_1 (k7\_fscirc\_1 X0 \\ X1 X2) (k4\_fscirc\_1 X0 X1 X2))\wedge((v4\_msafree2 (k7\_fscirc\_1 X0 X1 \\ X2) (k4\_fscirc\_1 X0 X1 X2))\wedge((v4\_circcomb (k7\_fscirc\_1 X0 X1 X2) \\ (k4\_fscirc\_1 X0 X1 X2))\wedge((v6\_circcomb (k7\_fscirc\_1 X0 X1 X2) (k4\_fscirc\_1 \\ X0 X1 X2))\wedge(l3\_msualg\_1 (k7\_fscirc\_1 X0 X1 X2) (k4\_fscirc\_1 X0 X1 \\ X2)))))) \quad (18) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(\neg v2\_struct\_0 (k4\_fscirc\_1 \\ & X0 X1 X2))\wedge((\neg v11\_struct\_0 (k4\_fscirc\_1 X0 X1 X2))\wedge((v1\_msualg\_1 \\ & (k4\_fscirc\_1 X0 X1 X2))\wedge((v1\_circcomb (k4\_fscirc\_1 X0 X1 X2))\wedge \\ & ((v2\_circcomb (k4\_fscirc\_1 X0 X1 X2))\wedge((v3\_circcomb (k4\_fscirc\_1 \\ & X0 X1 X2))\wedge(l1\_msualg\_1 (k4\_fscirc\_1 X0 X1 X2))))))))) \end{aligned} \quad (19)$$

Assume the following.

$$\begin{aligned} & (v1\_funct\_1 k3\_twoscomp)\wedge((v1\_funct\_2 k3\_twoscomp (k4\_finseq\_2 \\ & np\_2 k6\_margrel1) k6\_margrel1)\wedge(m1\_subset\_1 k3\_twoscomp (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k4\_finseq\_2 np\_2 k6\_margrel1) k6\_margrel1)))) \end{aligned} \quad (20)$$

Assume the following.

$$\begin{aligned} & (v1\_funct\_1 k2\_twoscomp)\wedge((v1\_funct\_2 k2\_twoscomp (k4\_finseq\_2 \\ & np\_2 k6\_margrel1) k6\_margrel1)\wedge(m1\_subset\_1 k2\_twoscomp (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k4\_finseq\_2 np\_2 k6\_margrel1) k6\_margrel1)))) \end{aligned} \quad (21)$$

Assume the following.

$$\forall X0.\forall X1.k4\_tarski X0 X1 = k2\_tarski (k2\_tarski X0 X1) (k1\_tarski X0) \quad (22)$$

Assume the following.

$$\forall X0.\forall X1.k2\_tarski X0 X1 = k2\_tarski X1 X0 \quad (23)$$

Assume the following.

$$\forall X0.(v4\_funct\_1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 X0)\Rightarrow( (v1\_relat\_1 X1)\wedge(v1\_funct\_1 X1))) \quad (24)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge(l1\_msualg\_1 X0))\Rightarrow(\forall X1. \\ & (l3\_msualg\_1 X1 X0)\Rightarrow((v6\_circcomb X1 X0)\Rightarrow((v4\_msualg\_1 X1 X0)\wedge \\ & (v4\_msafree2 X1 X0)))) \end{aligned} \quad (25)$$

Assume the following.

$$\forall X0.(v1\_relat\_1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0))\Rightarrow(v1\_relat\_1 X1)) \quad (26)$$

Assume the following.

$$\forall X0.(l1\_msualg\_1 X0)\Rightarrow(((\neg v2\_struct\_0 X0)\wedge(v1\_circcomb X0))\Rightarrow((\neg v2\_struct\_0 X0)\wedge(v2\_msafree2 X0))) \quad (27)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v2\_relat\_1 X1)\wedge((v4\_relat\_1 \\ X1 X0)\wedge(v1\_funct\_1 X1))))\Rightarrow(\forall X2.(m1\_subset\_1 X2 (k4\_card\_3 \\ X1))\Rightarrow(v4\_relat\_1 X2 X0)) \end{aligned} \quad (28)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(\neg v1\_xtuple\_0 X0)\Rightarrow(\forall X1.(\neg v1\_xtuple\_0 X1)\Rightarrow \\ (\forall X2.(\neg v1\_xtuple\_0 X2)\Rightarrow(\forall X3.(m1\_subset\_1 X3 (k4\_card\_3 \\ (u3\_msualg\_1 (k4\_fscirc\_1 X0 X1 X2) (k7\_fscirc\_1 X0 X1 X2))))\Rightarrow( \\ \forall X4.(m1\_subset\_1 X4 k6\_margrel1)\Rightarrow(\forall X5.(m1\_subset\_1 \\ X5 k6\_margrel1)\Rightarrow(\forall X6.(m1\_subset\_1 X6 k6\_margrel1)\Rightarrow(( \\ (X4 = k1\_funct\_1 X3 X0)\wedge((X5 = k1\_funct\_1 X3 X1)\wedge(X6 = k1\_funct\_1 \\ X3 X2)))\Rightarrow((k1\_funct\_1 (k6\_circuit2 (k4\_fscirc\_1 X0 X1 X2) (k7\_fscirc\_1 \\ X0 X1 X2) X3) (k4\_tarski (k10\_finseq\_1 X0 X1) k3\_twoscomp) = k10\_margrel1 \\ (k9\_margrel1 X4) X5)\wedge((k1\_funct\_1 (k6\_circuit2 (k4\_fscirc\_1 \\ X0 X1 X2) (k7\_fscirc\_1 X0 X1 X2) X3) (k4\_tarski (k10\_finseq\_1 X1 X2) \\ k2\_twoscomp) = k10\_margrel1 X5 X6)\wedge(k1\_funct\_1 (k6\_circuit2 ( \\ k4\_fscirc\_1 X0 X1 X2) (k7\_fscirc\_1 X0 X1 X2) X3) (k4\_tarski (k10\_finseq\_1 \\ X0 X2) k3\_twoscomp) = k10\_margrel1 (k9\_margrel1 X4) X6)))))))))) \end{aligned}$$