# t12_fscirc_2 (TMT-beWC4y7pftfWH5q8DMcmLyCNCwAYNN6X)

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Let $k3\_msafree2 : \iota \Rightarrow \iota$ be given. Let $k3\_fscirc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_enumset1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k2\_twoscomp : \iota$ 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 $k2\_msafree2 : \iota \Rightarrow \iota$ be given. Let $k5\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10\_xtuple\_0 : \iota \Rightarrow \iota$ be given. Let $k1\_tarski : \iota \Rightarrow \iota$ be given. Let $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2\_struct\_0 : \iota \Rightarrow o$ be given. Let $v1\_circcomb : \iota \Rightarrow o$ be given. Let $v2\_circcomb : \iota \Rightarrow o$ be given. Let $l1\_msualg\_1 : \iota \Rightarrow o$ be given. Let $k2\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v11\_struct\_0 : \iota \Rightarrow o$ be given. Let $v1\_msualg\_1 : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_finseq\_1\ X1))) \Rightarrow ((k2\_msafree2\ (k5\_circcomb\ X0\ X1) = k10\_xtuple\_0\ X1) \wedge (k3\_msafree2\ (k5\_circcomb\ X0\ X1) = k1\_tarski\ (k4\_tarski\ X1\ X0))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.k1\_enumset1\ X0\ X1\ X2 = k2\_xboole\_0\ (k2\_tarski\ X0\ X1)\ (k1\_tarski\ X2) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v1\_circcomb\ X0) \wedge ((v2\_circcomb\ X0) \wedge (l1\_msualg\_1\ X0)))) \Rightarrow (\forall X1.((\neg v2\_struct\_0\ X1) \wedge ((v1\_circcomb\ X1) \wedge ((v2\_circcomb\ X1) \wedge (l1\_msualg\_1\ X1)))) \Rightarrow (k3\_msafree2\ (k2\_circcomb\ X0\ X1) = k2\_xboole\_0\ (k3\_msafree2\ X0)\ (k3\_msafree2\ X1))) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.k2\_tarski\ X0\ X1 = k2\_xboole\_0\ (k1\_tarski\ X0)\ (k1\_tarski\ X1) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v1\_funct\_1\ X1)\wedge(v1\_finseq\_1\ X1)))\Rightarrow((\neg v2\_struct\_0\ (k5\_circcomb\ X0\ X1))\wedge((\neg v11\_struct\_0\ (k5\_circcomb\ X0\ X1))\wedge(v1\_msualg\_1\ (k5\_circcomb\ X0\ X1)))) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.(v1\_relat\_1\ (k10\_finseq\_1\ X0\ X1))\wedge(v1\_funct\_1\ (k10\_finseq\_1\ X0\ X1)) \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((v2\_circcomb\ X0)\wedge(l1\_msualg\_1\ X0)))\wedge((\neg v2\_struct\_0\ X1)\wedge((v2\_circcomb\ X1)\wedge(l1\_msualg\_1\ X1))))\Rightarrow((\neg v2\_struct\_0\ (k2\_circcomb\ X0\ X1))\wedge((v1\_msualg\_1\ (k2\_circcomb\ X0\ X1))\wedge(v2\_circcomb\ (k2\_circcomb\ X0\ X1)))) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((v1\_circcomb\ X0)\wedge(l1\_msualg\_1\ X0)))\wedge((\neg v2\_struct\_0\ X1)\wedge((v1\_circcomb\ X1)\wedge(l1\_msualg\_1\ X1))))\Rightarrow((\neg v2\_struct\_0\ (k2\_circcomb\ X0\ X1))\wedge((v1\_msualg\_1\ (k2\_circcomb\ X0\ X1))\wedge(v1\_circcomb\ (k2\_circcomb\ X0\ X1)))) \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.v1\_finseq\_1\ (k10\_finseq\_1\ X0\ X1) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v1\_funct\_1\ X1)\wedge(v1\_finseq\_1\ X1)))\Rightarrow((\neg v11\_struct\_0\ (k5\_circcomb\ X0\ X1))\wedge((v1\_msualg\_1\ (k5\_circcomb\ X0\ X1))\wedge((v1\_circcomb\ (k5\_circcomb\ X0\ X1))\wedge(v2\_circcomb\ (k5\_circcomb\ X0\ X1))))) \tag{10}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v1\_funct\_1\ X1)\wedge(v1\_finseq\_1\ X1)))\Rightarrow((\neg v11\_struct\_0\ (k5\_circcomb\ X0\ X1))\wedge((v1\_msualg\_1\ (k5\_circcomb\ X0\ X1))\wedge(l1\_msualg\_1\ (k5\_circcomb\ X0\ X1)))) \tag{11}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\wedge((\neg v2\_struct\_0\ X1)\wedge(l1\_msualg\_1\ X1)))\Rightarrow((\neg v2\_struct\_0\ (k2\_circcomb\ X0\ X1))\wedge((v1\_msualg\_1\ (k2\_circcomb\ X0\ X1))\wedge(l1\_msualg\_1\ (k2\_circcomb\ X0\ X1)))) \tag{12}$$

Assume the following.

$$\forall X0.\forall X1.k4\_tarski\ X0\ X1 = k2\_tarski\ (k2\_tarski\ X0\ X1)\ (k1\_tarski\ X0) \tag{13}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.k3\_fscirc\_1\ X0\ X1\ X2 = k2\_circcomb\ (k2\_circcomb\ (k5\_circcomb\ k3\_twoscomp\ (k10\_finseq\_1\ X0\ X1))\ (k5\_circcomb\ k2\_twoscomp\ (k10\_finseq\_1\ X1\ X2)))\ (k5\_circcomb\ k3\_twoscomp\ (k10\_finseq\_1\ X0\ X2)) \tag{14}$$

**Theorem 1**

$$\forall X0.\forall X1.\forall X2.k3\_msafree2\ (k3\_fscirc\_1\ X0\ X1\ X2) = k1\_enumset1\ (k4\_tarski\ (k10\_finseq\_1\ X0\ X1)\ k3\_twoscomp)\ (k4\_tarski\ (k10\_finseq\_1\ X1\ X2)\ k2\_twoscomp)\ (k4\_tarski\ (k10\_finseq\_1\ X0\ X2)\ k3\_twoscomp)$$