# t26_circcomb (TM-RoQ91296mHsjxmDFXK3RZzDCpHUSPXCi7)

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Let $v2\_struct\_0 : \iota \Rightarrow o$ be given. Let $l1\_msualg\_1 : \iota \Rightarrow o$ be given. Let $v4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4\_card\_3 : \iota \Rightarrow \iota$ be given. Let $k2\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k11\_card\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $v1\_relat\_1 : \iota \Rightarrow o$ be given. Let $v2\_relat\_1 : \iota \Rightarrow o$ be given. Let $v1\_funct\_1 : \iota \Rightarrow o$ be given. Let $k1\_funct\_4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9\_xtuple\_0 : \iota \Rightarrow \iota$ be given. Let $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1\_struct\_0 : \iota \Rightarrow o$ be given. Let $l2\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $u4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u4\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $k3\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1\_msualg\_1 : \iota \Rightarrow \iota$ be given. Let $k6\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2\_msualg\_1 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((v1\_relat\_1\ X0) \wedge ((v2\_relat\_1\ X0) \wedge (v1\_funct\_1\ X0))) \Rightarrow (\forall X1.((v1\_relat\_1\ X1) \wedge ((v2\_relat\_1\ X1) \wedge (v1\_funct\_1\ X1))) \Rightarrow ((r1\_partfun1\ X0\ X1) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (k4\_card\_3\ (k1\_funct\_4\ X0\ X1))) \Rightarrow (k11\_card\_3\ (k1\_funct\_4\ X0\ X1)\ X2\ (k9\_xtuple\_0\ X0) \in k4\_card\_3\ X0))))) \tag{1}$$

Assume the following.

$$\forall X0.((v1\_relat\_1\ X0) \wedge ((v2\_relat\_1\ X0) \wedge (v1\_funct\_1\ X0))) \Rightarrow (\forall X1.((v1\_relat\_1\ X1) \wedge ((v2\_relat\_1\ X1) \wedge (v1\_funct\_1\ X1))) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (k4\_card\_3\ (k1\_funct\_4\ X0\ X1))) \Rightarrow (k11\_card\_3\ (k1\_funct\_4\ X0\ X1)\ X2\ (k9\_xtuple\_0\ X1) \in k4\_card\_3\ X1))) \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1) \wedge (v4\_relat\_1\ X1\ X0)) \Rightarrow (k1\_relset\_1\ X0\ X1 = k9\_xtuple\_0\ X1) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.((l1\_struct\_0\ X0)\wedge((v4\_msualg\_1\ X1\ X0)\wedge (l2\_msualg\_1\ X1\ X0)))\Rightarrow((v1\_relat\_1\ (u3\_msualg\_1\ X0\ X1))\wedge((v2\_relat\_1\ (u3\_msualg\_1\ X0\ X1))\wedge((v4\_relat\_1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0))\wedge((v1\_funct\_1\ (u3\_msualg\_1\ X0\ X1))\wedge(v1\_partfun1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0))))))) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((l1\_struct\_0\ X0)\wedge(l2\_msualg\_1\ X1\ X0))\Rightarrow ((v1\_relat\_1\ (u3\_msualg\_1\ X0\ X1))\wedge((v4\_relat\_1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0))\wedge((v1\_funct\_1\ (u3\_msualg\_1\ X0\ X1))\wedge(v1\_partfun1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0))))) \tag{5}$$

Assume the following.

$$\forall X0.(l5\_struct\_0\ X0)\Rightarrow(l1\_struct\_0\ X0) \tag{6}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\Rightarrow(\forall X1.\ (l3\_msualg\_1\ X1\ X0)\Rightarrow(l2\_msualg\_1\ X1\ X0)) \tag{7}$$

Assume the following.

$$\forall X0.(l1\_msualg\_1\ X0)\Rightarrow(l5\_struct\_0\ X0) \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\wedge(((\neg v2\_struct\_0\ X1)\wedge(l1\_msualg\_1\ X1))\wedge(((v4\_msualg\_1\ X2\ X0)\wedge(l3\_msualg\_1\ X2\ X0))\wedge((v4\_msualg\_1\ X3\ X1)\wedge(l3\_msualg\_1\ X3\ X1)))))\Rightarrow((v3\_msualg\_1\ (k3\_circcomb\ X0\ X1\ X2\ X3)\ (k2\_circcomb\ X0\ X1))\wedge((v4\_msualg\_1\ (k3\_circcomb\ X0\ X1\ X2\ X3)\ (k2\_circcomb\ X0\ X1))\wedge(l3\_msualg\_1\ (k3\_circcomb\ X0\ X1\ X2\ X3)\ (k2\_circcomb\ X0\ X1)))) \tag{9}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge(l1\_msualg\_1\ X1))\Rightarrow(\forall X2.((v4\_msualg\_1\ X2\ X0)\wedge(l3\_msualg\_1\ X2\ X0))\Rightarrow(\forall X3.((v4\_msualg\_1\ X3\ X1)\wedge(l3\_msualg\_1\ X3\ X1))\Rightarrow((r1\_partfun1\ (u3\_msualg\_1\ X0\ X2)\ (u3\_msualg\_1\ X1\ X3))\Rightarrow(\forall X4.((v3\_msualg\_1\ X4\ (k2\_circcomb\ X0\ X1))\wedge((v4\_msualg\_1\ X4\ (k2\_circcomb\ X0\ X1))\wedge(l3\_msualg\_1\ X4\ (k2\_circcomb\ X0\ X1))))\Rightarrow((X4 = k3\_circcomb\ X0\ X1\ X2\ X3)\Leftrightarrow((u3\_msualg\_1\ (k2\_circcomb\ X0\ X1)\ X4 = k1\_funct\_4\ (u3\_msualg\_1\ X0\ X2)\ (u3\_msualg\_1\ X1\ X3))\wedge(u4\_msualg\_1\ (k2\_circcomb\ X0\ X1)\ X4 = k1\_circcomb\ (u4\_struct\_0\ X0)\ (k3\_relat\_1\ (u1\_msualg\_1\ X0)\ (k6\_finseq\_2\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X2)))\ (k3\_relat\_1\ (u2\_msualg\_1\ X0)\ (u3\_msualg\_1\ X0\ X2))\ (u4\_struct\_0\ X1)\ (k3\_relat\_1\ (u1\_msualg\_1\ X1)\ (k6\_finseq\_2\ (u1\_struct\_0\ X1)\ (u3\_msualg\_1\ X1\ X3)))\ (k3\_relat\_1\ (u2\_msualg\_1\ X1)\ (u3\_msualg\_1\ X1\ X3))\ (u4\_msualg\_1\ X0\ X2)\ (u4\_msualg\_1\ X1\ X3))))))))) \tag{10}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge(v4\_relat\_1\ X1\ X0))\Rightarrow((v1\_partfun1\ X1\ X0)\Leftrightarrow(k1\_relset\_1\ X0\ X1 = X0)) \tag{11}$$

**Theorem 1**

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge(l1\_msualg\_1\ X1))\Rightarrow(\forall X2.((v4\_msualg\_1\ X2\ X0)\wedge(l3\_msualg\_1\ X2\ X0))\Rightarrow(\forall X3.((v4\_msualg\_1\ X3\ X1)\wedge(l3\_msualg\_1\ X3\ X1))\Rightarrow((r1\_partfun1\ (u3\_msualg\_1\ X0\ X2)\ (u3\_msualg\_1\ X1\ X3))\Rightarrow(\forall X4.(m1\_subset\_1\ X4\ (k4\_card\_3\ (u3\_msualg\_1\ (k2\_circcomb\ X0\ X1)\ (k3\_circcomb\ X0\ X1\ X2\ X3))))\Rightarrow((k11\_card\_3\ (u3\_msualg\_1\ (k2\_circcomb\ X0\ X1)\ (k3\_circcomb\ X0\ X1\ X2\ X3))\ X4\ (u1\_struct\_0\ X0) \in k4\_card\_3\ (u3\_msualg\_1\ X0\ X2))\wedge(k11\_card\_3\ (u3\_msualg\_1\ (k2\_circcomb\ X0\ X1)\ (k3\_circcomb\ X0\ X1\ X2\ X3))\ X4\ (u1\_struct\_0\ X1) \in k4\_card\_3\ (u3\_msualg\_1\ X1\ X3))))))))$$