

t9\_ftacell1 (TMVCGE-  
eXfh7fRXXxavdvED1wpAmVi85LQA9)

October 27, 2020

Let  $v1\_xtuple\_0 : \iota \Rightarrow o$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k12\_gfacirc1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_twoscomp : \iota$  be given. Let  $k3\_msafree2 : \iota \Rightarrow \iota$  be given. Let  $k13\_gfacirc1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_card\_3 : \iota \Rightarrow \iota$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_ftacell1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_ftacell1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_margrel1 : \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_facirc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_4 : \iota$  be given. Let  $k5\_ftacell1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_binarith : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_margrel1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_binarith : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_ftacell1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let

$k9\_gfacirc1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xtuple\_0 X0) \Rightarrow (\forall X1.(\neg v1\_xtuple\_0 X1) \Rightarrow \\
& (\forall X2.(\neg v1\_xtuple\_0 X2) \Rightarrow (\forall X3.(\neg v1\_xtuple\_0 X3) \Rightarrow \\
& (\forall X4.\neg(X4 \neq k4\_tarski (k10\_finseq\_1 X3 (k12\_gfacirc1 X0 \\
& X1 X2)) k2\_twoscomp) \wedge ((\neg X4 \in k3\_msafree2 (k13\_gfacirc1 X0 X1 X2)) \wedge \\
& (\exists X5.(m1\_subset\_1 X5 (k4\_card\_3 (u3\_msualg\_1 (k1\_ftacell1 \\
& X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4)))) \wedge (\exists X6.(m1\_subset\_1 \\
& X6 k6\_margrel1) \wedge (\exists X7.(m1\_subset\_1 X7 k6\_margrel1) \wedge (\exists X8. \\
& (m1\_subset\_1 X8 k6\_margrel1) \wedge (\exists X9.(m1\_subset\_1 X9 k6\_margrel1) \wedge \\
& (\exists X10.(m1\_subset\_1 X10 k6\_margrel1) \wedge ((X6 = k1\_funct\_1 \\
& X5 X0) \wedge ((X7 = k1\_funct\_1 X5 X1) \wedge ((X8 = k1\_funct\_1 X5 X2) \wedge ((X9 = k1\_funct\_1 \\
& X5 X3) \wedge ((X10 = k1\_funct\_1 X5 X4) \wedge (\neg(k1\_funct\_1 (k5\_facirc\_1 (k1\_ftacell1 \\
& X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4) X5 np\_4) (k12\_gfacirc1 \\
& (k12\_gfacirc1 X0 X1 X2) X4 X3) = k2\_binarith (k2\_binarith (k2\_binarith \\
& (k2\_binarith X6 X7) X8) X9) X10) \wedge ((k1\_funct\_1 (k5\_facirc\_1 (k1\_ftacell1 \\
& X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4) X5 np\_4) X0 = X6) \wedge ((k1\_funct\_1 \\
& (k5\_facirc\_1 (k1\_ftacell1 X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 \\
& X4) X5 np\_4) X1 = X7) \wedge ((k1\_funct\_1 (k5\_facirc\_1 (k1\_ftacell1 X0 \\
& X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4) X5 np\_4) X2 = X8) \wedge ((k1\_funct\_1 \\
& (k5\_facirc\_1 (k1\_ftacell1 X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 \\
& X4) X5 np\_4) X3 = X9) \wedge (k1\_funct\_1 (k5\_facirc\_1 (k1\_ftacell1 X0 \\
& X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4) X5 np\_4) X4 = X10)))))))))))))))))
\end{aligned}$$

(1)

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xtuple\_0 X0) \Rightarrow (\forall X1.(\neg v1\_xtuple\_0 X1) \Rightarrow \\
& (\forall X2.(\neg v1\_xtuple\_0 X2) \Rightarrow (\forall X3.(\neg v1\_xtuple\_0 X3) \Rightarrow \\
& (\forall X4.(\neg(X4 \neq k4\_tarski (k10\_finseq\_1 X3 (k12\_gfacirc1 X0 \\
& X1 X2)) k2\_twoscomp) \wedge ((\neg X4 \in k3\_msafree2 (k13\_gfacirc1 X0 X1 X2)) \wedge \\
& (\exists X5.(m1\_subset\_1 X5 (k4\_card\_3 (u3\_msualg\_1 (k1\_ftacell1 \\
& X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4)))) \wedge (\exists X6.(m1\_subset\_1 \\
& X6 k6\_margrel1) \wedge (\exists X7.(m1\_subset\_1 X7 k6\_margrel1) \wedge (\exists X8. \\
& (m1\_subset\_1 X8 k6\_margrel1) \wedge (\exists X9.(m1\_subset\_1 X9 k6\_margrel1) \wedge \\
& (\exists X10.(m1\_subset\_1 X10 k6\_margrel1) \wedge ((X6 = k1\_funct\_1 \\
& X5 X0) \wedge ((X7 = k1\_funct\_1 X5 X1) \wedge ((X8 = k1\_funct\_1 X5 X2) \wedge ((X9 = k1\_funct\_1 \\
& X5 X3) \wedge ((X10 = k1\_funct\_1 X5 X4) \wedge (\neg(k1\_funct\_1 (k5\_facirc\_1 (k1\_ftacell1 \\
& X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4) X5 np\_4) (k9\_gfacirc1 ( \\
& k12\_gfacirc1 X0 X1 X2) X4 X3) = k1\_binarith (k1\_binarith (k10\_margrel1 \\
& (k2\_binarith (k2\_binarith X6 X7) X8) X10) (k10\_margrel1 X10 X9)) \\
& (k10\_margrel1 X9 (k2\_binarith (k2\_binarith X6 X7) X8))) \wedge ((k1\_funct\_1 \\
& (k5\_facirc\_1 (k1\_ftacell1 X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 \\
& X4) X5 np\_4) X0 = X6) \wedge ((k1\_funct\_1 (k5\_facirc\_1 (k1\_ftacell1 X0 \\
& X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4) X5 np\_4) X1 = X7) \wedge ((k1\_funct\_1 \\
& (k5\_facirc\_1 (k1\_ftacell1 X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 \\
& X4) X5 np\_4) X2 = X8) \wedge ((k1\_funct\_1 (k5\_facirc\_1 (k1\_ftacell1 X0 \\
& X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4) X5 np\_4) X3 = X9) \wedge (k1\_funct\_1 \\
& (k5\_facirc\_1 (k1\_ftacell1 X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 \\
& X4) X5 np\_4) X4 = X10)))))))))))))))))))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. \forall X4. k6\_ftacell1 \tag{3}$$

$$X0 X1 X2 X3 X4 = k12\_gfacirc1 (k12\_gfacirc1 X0 X1 X2) X4 X3$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. \forall X4. k5\_ftacell1 \tag{4}$$

$$X0 X1 X2 X3 X4 = k9\_gfacirc1 (k12\_gfacirc1 X0 X1 X2) X4 X3$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.(\neg v1\_xtuple\_0 X0) \Rightarrow (\forall X1.(\neg v1\_xtuple\_0 X1) \Rightarrow \\
& (\forall X2.(\neg v1\_xtuple\_0 X2) \Rightarrow (\forall X3.(\neg v1\_xtuple\_0 X3) \Rightarrow \\
& (\forall X4. \neg(X4 \neq k4\_tarski (k10\_finseq\_1 X3 (k12\_gfacirc1 X0 \\
& X1 X2)) k2\_twoscomp) \wedge ((\neg X4 \in k3\_msafree2 (k13\_gfacirc1 X0 X1 X2)) \wedge \\
& (\exists X5.(m1\_subset\_1 X5 (k4\_card\_3 (u3\_msualg\_1 (k1\_ftacell1 \\
& X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4)))) \wedge (\exists X6.(m1\_subset\_1 \\
& X6 k6\_margrel1) \wedge (\exists X7.(m1\_subset\_1 X7 k6\_margrel1) \wedge (\exists X8. \\
& (m1\_subset\_1 X8 k6\_margrel1) \wedge (\exists X9.(m1\_subset\_1 X9 k6\_margrel1) \wedge \\
& (\exists X10.(m1\_subset\_1 X10 k6\_margrel1) \wedge ((X6 = k1\_funct\_1 \\
& X5 X0) \wedge ((X7 = k1\_funct\_1 X5 X1) \wedge ((X8 = k1\_funct\_1 X5 X2) \wedge ((X9 = k1\_funct\_1 \\
& X5 X3) \wedge ((X10 = k1\_funct\_1 X5 X4) \wedge (\neg(k1\_funct\_1 (k5\_facirc\_1 (k1\_ftacell1 \\
& X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4) X5 np\_4) (k5\_ftacell1 X0 \\
& X1 X2 X3 X4) = k1\_binarith (k1\_binarith (k10\_margrel1 (k2\_binarith \\
& (k2\_binarith X6 X7) X8) X10) (k10\_margrel1 X10 X9)) (k10\_margrel1 \\
& X9 (k2\_binarith (k2\_binarith X6 X7) X8))) \wedge (k1\_funct\_1 (k5\_facirc\_1 \\
& (k1\_ftacell1 X0 X1 X2 X3 X4) (k2\_ftacell1 X0 X1 X2 X3 X4) X5 np\_4) ( \\
& k6\_ftacell1 X0 X1 X2 X3 X4) = k2\_binarith (k2\_binarith (k2\_binarith \\
& (k2\_binarith X6 X7) X8) X9) X10))))))))))))))
\end{aligned}$$