

t25\_gfacirc2 (TM-  
MAZfGXrQ5Gj2WUjHcUkgMb4SsVJJytw84)

October 27, 2020

Let  $v7\_ordinal1 : \iota \Rightarrow o$  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  $k3\_msafree2 : \iota \Rightarrow \iota$  be given. Let  $k5\_gfacirc2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k25\_gfacirc1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $k5\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_gfacirc2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_gfacirc2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k26\_gfacirc1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k21\_gfacirc1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $k1\_margrel1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_margrel1 : \iota$  be given. Let  $k4\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_margrel1 : \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k7\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $v3\_circcomb : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. \forall X2. v1\_relat\_1 (k3\_msafree2 (k25\_gfacirc1 X0 X1 X2)) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v1\_circcomb X0) \wedge ((v2\_circcomb \\ & X0) \wedge (l1\_msualg\_1 X0)))) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v1\_circcomb \\ & X1) \wedge ((v2\_circcomb X1) \wedge (l1\_msualg\_1 X1)))) \Rightarrow (((v1\_relat\_1 (k3\_msafree2 \\ & X0)) \wedge (v1\_relat\_1 (k3\_msafree2 X1))) \Rightarrow (v1\_relat\_1 (k3\_msafree2 \\ & (k2\_circcomb X0 X1)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 X1))) \Rightarrow (v1\_relat\_1 (k3\_msafree2 (k5\_circcomb X0 X1))) \quad (3)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 X1))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v1\_funct\_1 X2) \wedge (v1\_finseq\_1 X2)))) \Rightarrow ((k5\_gfacirc2 (k1\_nat\_1 X0 np\_1) X1 X2 = k2\_circcomb (k5\_gfacirc2 X0 X1 X2) (k25\_gfacirc1 (k1\_funct\_1 X1 (k1\_nat\_1 X0 np\_1)) (k1\_funct\_1 X2 (k1\_nat\_1 X0 np\_1)) (k7\_gfacirc2 X0 X1 X2))) \wedge ((k6\_gfacirc2 (k1\_nat\_1 X0 np\_1) X1 X2 = k3\_circcomb (k5\_gfacirc2 X0 X1 X2) (k25\_gfacirc1 (k1\_funct\_1 X1 (k1\_nat\_1 X0 np\_1)) (k1\_funct\_1 X2 (k1\_nat\_1 X0 np\_1)) (k7\_gfacirc2 X0 X1 X2)) (k6\_gfacirc2 X0 X1 X2) (k26\_gfacirc1 (k1\_funct\_1 X1 (k1\_nat\_1 X0 np\_1)) (k1\_funct\_1 X2 (k1\_nat\_1 X0 np\_1)) (k7\_gfacirc2 X0 X1 X2))) \wedge (k7\_gfacirc2 (k1\_nat\_1 X0 np\_1) X1 X2 = k21\_gfacirc1 (k1\_funct\_1 X1 (k1\_nat\_1 X0 np\_1)) (k1\_funct\_1 X2 (k1\_nat\_1 X0 np\_1)) (k7\_gfacirc2 X0 X1 X2))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finseq\_1 X0))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 X1))) \Rightarrow ((k5\_gfacirc2 k6\_numbers X0 X1 = k5\_circcomb (k1\_margrel1 k6\_margrel1 (k4\_finseq\_2 k6\_numbers k6\_margrel1) k8\_margrel1) k1\_xboole\_0) \wedge ((k6\_gfacirc2 k6\_numbers X0 X1 = k7\_circcomb k1\_xboole\_0 k6\_margrel1 (k1\_margrel1 k6\_margrel1 (k4\_finseq\_2 k6\_numbers k6\_margrel1) k8\_margrel1) k1\_xboole\_0) \wedge (k7\_gfacirc2 k6\_numbers X0 X1 = k4\_tarski k1\_xboole\_0 (k1\_margrel1 k6\_margrel1 (k4\_finseq\_2 k6\_numbers k6\_margrel1) k8\_margrel1))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\forall X0 : \iota \Rightarrow o.((X0 k6\_numbers) \wedge (\forall X1.(v7\_ordinal1 X1) \Rightarrow ((X0 X1) \Rightarrow (X0 (k1\_nat\_1 X1 np\_1)))))) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (X0 X1)) \tag{6}$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \tag{7}$$

Assume the following.

$$v1\_xboole\_0 k1\_xboole\_0 \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((v7\_ordinal1 X0) \wedge (((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 X1))) \wedge ((v1\_relat\_1 X2) \wedge ((v1\_funct\_1 X2) \wedge (v1\_finseq\_1 X2)))))) \Rightarrow ((\neg v2\_struct\_0 (k5\_gfacirc2 X0 X1 X2)) \wedge ((\neg v11\_struct\_0 (k5\_gfacirc2 X0 X1 X2)) \wedge ((v1\_msualg\_1 (k5\_gfacirc2 X0 X1 X2)) \wedge ((v1\_circcomb (k5\_gfacirc2 X0 X1 X2)) \wedge ((v2\_circcomb (k5\_gfacirc2 X0 X1 X2)) \wedge ((v3\_circcomb (k5\_gfacirc2 X0 X1 X2)) \wedge (l1\_msualg\_1 (k5\_gfacirc2 X0 X1 X2))))))))))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(\neg v2\_struct\_0 (k25\_gfacirc1 \\ & X0 X1 X2))\wedge((\neg v11\_struct\_0 (k25\_gfacirc1 X0 X1 X2))\wedge((v1\_msualg\_1 \\ & (k25\_gfacirc1 X0 X1 X2))\wedge((v1\_circcomb (k25\_gfacirc1 X0 X1 X2))\wedge \\ & ((v2\_circcomb (k25\_gfacirc1 X0 X1 X2))\wedge((v3\_circcomb (k25\_gfacirc1 \\ & X0 X1 X2))\wedge(l1\_msualg\_1 (k25\_gfacirc1 X0 X1 X2))))))))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0)\Rightarrow(v1\_relat\_1 X0) \quad (11)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0)\Rightarrow(v1\_funct\_1 X0) \quad (12)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0)\wedge(v1\_xboole\_0 X0))\Rightarrow((v1\_relat\_1 X0)\wedge(v1\_finseq\_1 X0)) \quad (13)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(v7\_ordinal1 X0)\Rightarrow(\forall X1.((v1\_relat\_1 X1)\wedge(( \\ & v1\_funct\_1 X1)\wedge(v1\_finseq\_1 X1)))\Rightarrow(\forall X2.((v1\_relat\_1 \\ & X2)\wedge((v1\_funct\_1 X2)\wedge(v1\_finseq\_1 X2)))\Rightarrow(v1\_relat\_1 (k3\_msafree2 \\ & (k5\_gfacirc2 X0 X1 X2)))))) \end{aligned}$$