

t27\_grcat\_1  
(TMJsg5sfc9BDw2fZ2fy31f374nRrZnZhxr)

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Let  $r1\_grcat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_xtuple\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v8\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u1\_algstr\_0 : \iota \Rightarrow \iota$  be given. Let  $k5\_vectsp\_1 : \iota \Rightarrow \iota$  be given. Let  $g2\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\ & \forall X6. \forall X7. (k6\_xtuple\_0 X0 X1 X2 X3 = k6\_xtuple\_0 X4 X5 \\ & X6 X7) \Rightarrow ((X0 = X4) \wedge ((X1 = X5) \wedge ((X2 = X6) \wedge (X3 = X7)))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. (l2\_algstr\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l1\_algstr\_0 X0)) \quad (2)$$

Assume the following.

$$\forall X0. (l2\_struct\_0 X0) \Rightarrow (k4\_struct\_0 X0 = u2\_struct\_0 X0) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (r1\_grcat\_1 X0 X1) \Leftrightarrow (\exists X2. \exists X3. \\ & \exists X4. \exists X5. (X0 = k6\_xtuple\_0 X2 X3 X4 X5) \wedge (\exists X6. \\ & ((\neg v2\_struct\_0 X6) \wedge (v8\_algstr\_0 X6) \wedge (v13\_algstr\_0 X6) \wedge (( \\ & v3\_rlvect\_1 X6) \wedge (v4\_rlvect\_1 X6) \wedge (l2\_algstr\_0 X6)))))) \wedge (( \\ & X1 = X6) \wedge ((X2 = u1\_struct\_0 X6) \wedge ((X3 = u1\_algstr\_0 X6) \wedge ((X4 = k5\_vectsp\_1 \\ & X6) \wedge (X5 = k4\_struct\_0 X6)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0. (l2\_algstr\_0 X0) \Rightarrow ((v8\_algstr\_0 X0) \Rightarrow (X0 = g2\_algstr\_0 (u1\_struct\_0 X0) (u1\_algstr\_0 X0) (u2\_struct\_0 X0))) \quad (5)$$

**Theorem 1**

$$\forall X0. \forall X1. \forall X2. ((r1\_grcat\_1 X0 X1) \wedge (r1\_grcat\_1 X0 X2)) \Rightarrow (X1 = X2)$$