

# t8\_grcat\_1

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Let  $l1\_grcat\_1 : \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  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  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $g1\_grcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_grcat\_1 : \iota \Rightarrow \iota$  be given. Let  $k8\_grcat\_1 : \iota \Rightarrow \iota$  be given. Let  $r1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_grcat\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v1\_grcat\_1 : \iota \Rightarrow o$  be given. Let  $u1\_grcat\_1 : \iota \Rightarrow \iota$  be given. Let  $u3\_grcat\_1 : \iota \Rightarrow \iota$  be given. Let  $u2\_grcat\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\ & ((\neg v1\_xboole\_0 X1) \wedge (\neg v1\_xboole\_0 X3) \wedge (((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 X0 X1) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \wedge ((v1\_funct\_1 X5) \wedge ((v1\_funct\_2 X5 X2 X3) \wedge (m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X2 X3)))))) \Rightarrow ((r1\_funct\_2 X0 X1 X2 X3 X4 X5) \Leftrightarrow (X4 = X5)) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l2\_algstr\_0 X0)))))) \wedge \\ & (((\neg v2\_struct\_0 X1) \wedge ((v13\_algstr\_0 X1) \wedge ((v3\_rlvect\_1 X1) \wedge ((v4\_rlvect\_1 X1) \wedge (l2\_algstr\_0 X1)))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (\forall X3. \forall X4. \forall X5. (g1\_grcat\_1 X0 X1 X2 = g1\_grcat\_1 X3 X4 X5) \Rightarrow ((X0 = X3) \wedge ((X1 = X4) \wedge (X2 = X5)))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \tag{3}$$

Assume the following.

$$\forall X0.(l2\_algstr\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l1\_algstr\_0 X0)) \quad (4)$$

Assume the following.

$$\forall X0.(l1\_algstr\_0 X0) \Rightarrow (l1\_struct\_0 X0) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l2\_algstr\_0 X0)))))) \wedge \\ & (((\neg v2\_struct\_0 X1) \wedge ((v13\_algstr\_0 X1) \wedge ((v3\_rlvect\_1 X1) \wedge \\ & (v4\_rlvect\_1 X1) \wedge (l2\_algstr\_0 X1)))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1))))))) \Rightarrow ((v1\_grcat\_1 \\ & (g1\_grcat\_1 X0 X1 X2)) \wedge (l1\_grcat\_1 (g1\_grcat\_1 X0 X1 X2))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.(l1\_grcat\_1 X0) \Rightarrow (k7\_grcat\_1 X0 = u1\_grcat\_1 X0) \quad (7)$$

Assume the following.

$$\forall X0.(l1\_grcat\_1 X0) \Rightarrow (k9\_grcat\_1 X0 = u3\_grcat\_1 X0) \quad (8)$$

Assume the following.

$$\forall X0.(l1\_grcat\_1 X0) \Rightarrow (k8\_grcat\_1 X0 = u2\_grcat\_1 X0) \quad (9)$$

Assume the following.

$$\forall X0.(l1\_grcat\_1 X0) \Rightarrow ((v1\_grcat\_1 X0) \Rightarrow (X0 = g1\_grcat\_1 \\ (u1\_grcat\_1 X0) (u2\_grcat\_1 X0) (u3\_grcat\_1 X0))) \quad (10)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(l1\_grcat\_1 X0) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge \\ & (v13\_algstr\_0 X1) \wedge ((v3\_rlvect\_1 X1) \wedge ((v4\_rlvect\_1 X1) \wedge (l2\_algstr\_0 \\ & X1)))))) \Rightarrow (\forall X2. ((\neg v2\_struct\_0 X2) \wedge ((v13\_algstr\_0 X2) \wedge \\ & ((v3\_rlvect\_1 X2) \wedge ((v4\_rlvect\_1 X2) \wedge (l2\_algstr\_0 X2)))))) \Rightarrow ( \\ & \forall X3. ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 (u1\_struct\_0 X1) \\ & (u1\_struct\_0 X2)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (u1\_struct\_0 X1) (u1\_struct\_0 X2)))))) \Rightarrow ((X0 = g1\_grcat\_1 X1 X2 \\ & X3) \Rightarrow ((k7\_grcat\_1 X0 = X1) \wedge ((k8\_grcat\_1 X0 = X2) \wedge (r1\_funct\_2 (u1\_struct\_0 \\ & (k7\_grcat\_1 X0)) (u1\_struct\_0 (k8\_grcat\_1 X0)) (u1\_struct\_0 X1) \\ & (u1\_struct\_0 X2) (k9\_grcat\_1 X0 X3)))))) \end{aligned}$$