

t31\_helly  
(TMUoK8H5TazCwRqTsZDSELOhGC1ZGPnT8tJ)

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $v1\_glib\_000 : \iota \Rightarrow o$  be given. Let  $v3\_glib\_002 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_glib\_000 : \iota \Rightarrow \iota$  be given. Let  $k6\_glib\_001 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_helly : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m3\_glib\_001 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_glib\_001 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v5\_glib\_001 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v1\_funct\_1 \\ X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_glib\_000 X0)))))) \Rightarrow (\forall X1.(m3\_glib\_001 \\ X1 X0) \Rightarrow (\forall X2.\forall X3.(r1\_glib\_001 X0 X2 X3 X1) \Leftrightarrow (r1\_glib\_001 \\ X0 X3 X2 (k6\_glib\_001 X0 X1)))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge \\ ((v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_glib\_000 X0)))))) \wedge (( \\ v5\_glib\_001 X1 X0) \wedge (m3\_glib\_001 X1 X0)) \Rightarrow (v5\_glib\_001 (k6\_glib\_001 \\ X0 X1) X0) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge \\ ((v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_glib\_000 X0)))))) \wedge (m3\_glib\_001 \\ X1 X0) \Rightarrow (m3\_glib\_001 (k6\_glib\_001 X0 X1) X0) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 \\ X0 k5\_numbers) \wedge ((v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_glib\_000 \\ X0) \wedge (v3\_glib\_002 X0)))))) \wedge ((m1\_subset\_1 X1 (k6\_glib\_000 X0) \wedge \\ (m1\_subset\_1 X2 (k6\_glib\_000 X0)))) \Rightarrow ((v5\_glib\_001 (k2\_helly \\ X0 X1 X2) X0) \wedge (m3\_glib\_001 (k2\_helly X0 X1 X2) X0)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v1\_funct\_1 \\
& X0) \wedge ((v1\_finset\_1 X0) \wedge ((v1\_glib\_000 X0) \wedge (v3\_glib\_002 X0)))))) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (k6\_glib\_000 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\
& X2 (k6\_glib\_000 X0)) \Rightarrow (\forall X3.((v5\_glib\_001 X3 X0) \wedge (m3\_glib\_001 \\
& X3 X0)) \Rightarrow ((X3 = k2\_helly X0 X1 X2) \Leftrightarrow (r1\_glib\_001 X0 X1 X2 X3))))))
\end{aligned} \tag{5}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v1\_funct\_1 \\
& X0) \wedge ((v1\_finset\_1 X0) \wedge ((v1\_glib\_000 X0) \wedge (v3\_glib\_002 X0)))))) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (k6\_glib\_000 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\
& X2 (k6\_glib\_000 X0)) \Rightarrow (k6\_glib\_001 X0 (k2\_helly X0 X1 X2) = k2\_helly \\
& X0 X2 X1)))
\end{aligned}$$