

## t18\_fuzzy\_1

(TMQHCKAi28UG8xicb5g9NberZWtaZ6BWA5i)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_rcomp\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  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  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_fuzzy\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_fuzzy\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_fuzzy\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_fuzzy\_1 : \iota \Rightarrow \iota$  be given. Let  $r1\_fuzzy\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. ((v5\_relat\_1 X1 (k1\_rcomp\_1 \\
 & k6\_numbers np\_1)) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k1\_numbers) \wedge \\
 & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \Rightarrow \\
 & (\forall X2. ((v5\_relat\_1 X2 (k1\_rcomp\_1 k6\_numbers np\_1)) \wedge ( \\
 & (v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 k1\_numbers) \wedge (m1\_subset\_1 \\
 & X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \Rightarrow ((r2\_funct\_2 \\
 & X0 k1\_numbers (k2\_fuzzy\_1 X0 X1 (k1\_fuzzy\_1 X0 X1 X2)) X1) \wedge (r2\_funct\_2 \\
 & X0 k1\_numbers (k1\_fuzzy\_1 X0 X1 (k2\_fuzzy\_1 X0 X1 X2)) X1))) \\
 & \tag{1}
 \end{aligned}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. ((v5\_relat\_1 X1 (k1\_rcomp\_1 \\
 & k6\_numbers np\_1)) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k1\_numbers) \wedge \\
 & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \Rightarrow \\
 & (\forall X2. ((v5\_relat\_1 X2 (k1\_rcomp\_1 k6\_numbers np\_1)) \wedge ( \\
 & (v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 k1\_numbers) \wedge (m1\_subset\_1 \\
 & X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \Rightarrow ((r1\_fuzzy\_1 \\
 & (k1\_fuzzy\_1 X0 X1 X2) X1) \wedge (r1\_fuzzy\_1 X1 (k2\_fuzzy\_1 X0 X1 X2)))) \\
 & \tag{2}
 \end{aligned}$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v5\_relat\_1 X1 (k1\_rcomp\_1 \\ k6\_numbers np\_1)) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k1\_numbers) \wedge \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \Rightarrow \\ (r1\_fuzzy\_1 X1 (k5\_fuzzy\_1 X0))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v5\_relat\_1 X1 (k1\_rcomp\_1 \\ k6\_numbers np\_1)) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k1\_numbers) \wedge \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \Rightarrow \\ (r1\_fuzzy\_1 (k4\_fuzzy\_1 X0) X1)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X2) \wedge \\ ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ X0 X1)))))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 \\ X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow ((r2\_funct\_2 X0 X1 X2 \\ X3) \Leftrightarrow (X2 = X3)) \end{aligned} \quad (5)$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v5\_relat\_1 X1 (k1\_rcomp\_1 \\ k6\_numbers np\_1)) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k1\_numbers) \wedge \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \Rightarrow \\ (\forall X2.((v5\_relat\_1 X2 (k1\_rcomp\_1 k6\_numbers np\_1)) \wedge ( \\ (v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 k1\_numbers) \wedge (m1\_subset\_1 \\ X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \Rightarrow (((r1\_fuzzy\_1 \\ X1 X2) \wedge (r1\_fuzzy\_1 X2 X1)) \Rightarrow (r2\_funct\_2 X0 k1\_numbers X1 X2)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow ((v5\_relat\_1 (k5\_fuzzy\_1 X0) (k1\_rcomp\_1 \\ k6\_numbers np\_1)) \wedge ((v1\_funct\_1 (k5\_fuzzy\_1 X0)) \wedge ((v1\_funct\_2 \\ (k5\_fuzzy\_1 X0) X0 k1\_numbers) \wedge (m1\_subset\_1 (k5\_fuzzy\_1 X0) ( \\ k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow ((v5\_relat\_1 (k4\_fuzzy\_1 X0) (k1\_rcomp\_1 \\ k6\_numbers np\_1)) \wedge ((v1\_funct\_1 (k4\_fuzzy\_1 X0)) \wedge ((v1\_funct\_2 \\ (k4\_fuzzy\_1 X0) X0 k1\_numbers) \wedge (m1\_subset\_1 (k4\_fuzzy\_1 X0) ( \\ k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge(((v5\_relat\_1 \\
& X1 (k1\_rcomp\_1 k6\_numbers np\_1))\wedge((v1\_funct\_1 X1)\wedge((v1\_funct\_2 \\
& X1 X0 k1\_numbers)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 \\
& k1\_numbers))))))\wedge((v5\_relat\_1 X2 (k1\_rcomp\_1 k6\_numbers np\_1))\wedge \\
& ((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 X0 k1\_numbers)\wedge(m1\_subset\_1 \\
& X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers))))))\wedge((v5\_relat\_1 \\
& (k2\_fuzzy\_1 X0 X1 X2) (k1\_rcomp\_1 k6\_numbers np\_1))\wedge((v1\_funct\_1 \\
& (k2\_fuzzy\_1 X0 X1 X2))\wedge((v1\_funct\_2 (k2\_fuzzy\_1 X0 X1 X2) X0 k1\_numbers)\wedge \\
& (m1\_subset\_1 (k2\_fuzzy\_1 X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 \\
& k1\_numbers))))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge(((v5\_relat\_1 \\
& X1 (k1\_rcomp\_1 k6\_numbers np\_1))\wedge((v1\_funct\_1 X1)\wedge((v1\_funct\_2 \\
& X1 X0 k1\_numbers)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 \\
& k1\_numbers))))))\wedge((v5\_relat\_1 X2 (k1\_rcomp\_1 k6\_numbers np\_1))\wedge \\
& ((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 X0 k1\_numbers)\wedge(m1\_subset\_1 \\
& X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers))))))\wedge((v5\_relat\_1 \\
& (k1\_fuzzy\_1 X0 X1 X2) (k1\_rcomp\_1 k6\_numbers np\_1))\wedge((v1\_funct\_1 \\
& (k1\_fuzzy\_1 X0 X1 X2))\wedge((v1\_funct\_2 (k1\_fuzzy\_1 X0 X1 X2) X0 k1\_numbers)\wedge \\
& (m1\_subset\_1 (k1\_fuzzy\_1 X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 \\
& k1\_numbers))))))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge(((v5\_relat\_1 \\
& X1 (k1\_rcomp\_1 k6\_numbers np\_1))\wedge((v1\_funct\_1 X1)\wedge((v1\_funct\_2 \\
& X1 X0 k1\_numbers)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 \\
& k1\_numbers))))))\wedge((v5\_relat\_1 X2 (k1\_rcomp\_1 k6\_numbers np\_1))\wedge \\
& ((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 X0 k1\_numbers)\wedge(m1\_subset\_1 \\
& X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers))))))\wedge((v5\_relat\_1 \\
& X0 X1 X2 = k2\_fuzzy\_1 X0 X2 X1)
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge(((v5\_relat\_1 \\
& X1 (k1\_rcomp\_1 k6\_numbers np\_1))\wedge((v1\_funct\_1 X1)\wedge((v1\_funct\_2 \\
& X1 X0 k1\_numbers)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 \\
& k1\_numbers))))))\wedge((v5\_relat\_1 X2 (k1\_rcomp\_1 k6\_numbers np\_1))\wedge \\
& ((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 X0 k1\_numbers)\wedge(m1\_subset\_1 \\
& X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers))))))\wedge((v5\_relat\_1 \\
& X0 X1 X2 = k1\_fuzzy\_1 X0 X2 X1)
\end{aligned} \tag{13}$$

**Theorem 1**

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v5\_relat\_1 X1 (k1\_rcomp\_1 \\ k6\_numbers np\_1)) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k1\_numbers) \wedge \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k1\_numbers)))))) \Rightarrow \\ ((r2\_funct\_2 X0 k1\_numbers (k2\_fuzzy\_1 X0 X1 (k5\_fuzzy\_1 X0)) ( \\ k5\_fuzzy\_1 X0)) \wedge ((r2\_funct\_2 X0 k1\_numbers (k1\_fuzzy\_1 X0 X1 ( \\ k5\_fuzzy\_1 X0)) X1) \wedge ((r2\_funct\_2 X0 k1\_numbers (k2\_fuzzy\_1 X0 \\ X1 (k4\_fuzzy\_1 X0)) X1) \wedge (r2\_funct\_2 X0 k1\_numbers (k1\_fuzzy\_1 \\ X0 X1 (k4\_fuzzy\_1 X0)) (k4\_fuzzy\_1 X0)))))) \end{aligned}$$