

# t20\_normform (TM- LUyWn4FttJT7QZ5k2wy6bLcmbvB71hh2P)

October 27, 2020

Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_finsub\_1 : \iota \Rightarrow \iota$  be given. Let  $r1\_normform : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_normform : \iota \Rightarrow \iota$  be given. Let  $v1\_setwiseo : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  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  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k5\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v4\_finsub\_1 : \iota \Rightarrow o$  be given. Let  $k1\_normform : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_binop\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_binop\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.v1\_setwiseo (k5\_normform X0) (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)) \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge (v1\_funct\_2 X1 (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))) \Rightarrow ((v1\_setwiseo X1 X0) \Rightarrow (\forall X2.(m1\_subset\_1 X2 X0) \Rightarrow ((k5\_binop\_1 X0 X1 (k4\_binop\_1 X0 X1) X2 = X2) \wedge (k5\_binop\_1 X0 X1 X2 (k4\_binop\_1 X0 X1) = X2)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v1\_xboole\_0 X0) \wedge (v4\_finsub\_1 X0)) \Rightarrow (\forall X1.((\neg v1\_xboole\_0 X1) \wedge (v4\_finsub\_1 X1)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (k2\_zfmisc\_1 X0 X1)) \Rightarrow ((X2 = k1\_normform X0 X1 X2 X3) \Rightarrow (r1\_normform X0 X1 X3 X2)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0 (k5\_finsub\_1 X0)) \wedge (v4\_finsub\_1 (k5\_finsub\_1 X0)) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_funct\_1 (k5\_normform X0)) \wedge ((v1\_funct\_2 (k5\_normform \\ & X0) (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)) \\ & (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0))) (k2\_zfmisc\_1 \\ & (k5\_finsub\_1 X0) (k5\_finsub\_1 X0))) \wedge ((v1\_binop\_1 (k5\_normform \\ & X0) (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0))) \wedge ((v2\_binop\_1 \\ & (k5\_normform X0) (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0))) \wedge \\ & (v3\_binop\_1 (k5\_normform X0) (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 \\ & X0)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge (\neg v1\_xboole\_0 X1)) \Rightarrow \\ & (\neg v1\_xboole\_0 (k2\_zfmisc\_1 X0 X1)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_funct\_1 (k5\_normform X0)) \wedge ((v1\_funct\_2 (k5\_normform \\ & X0) (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)) \\ & (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0))) (k2\_zfmisc\_1 \\ & (k5\_finsub\_1 X0) (k5\_finsub\_1 X0))) \wedge (m1\_subset\_1 (k5\_normform \\ & X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k5\_finsub\_1 \\ & X0) (k5\_finsub\_1 X0)) (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 \\ & X0))) (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 \\ & X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X0) X0)))))) \Rightarrow (m1\_subset\_1 (k4\_binop\_1 X0 X1) X0) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)) (k2\_zfmisc\_1 \\ & (k5\_finsub\_1 X0) (k5\_finsub\_1 X0))) (k2\_zfmisc\_1 (k5\_finsub\_1 \\ & X0) (k5\_finsub\_1 X0))) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)) \\ & (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0))) (k2\_zfmisc\_1 \\ & (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)))))) \Rightarrow ((X1 = k5\_normform X0) \Leftrightarrow \\ & (\forall X2.(m1\_subset\_1 X2 (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 \\ & X0))) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (k2\_zfmisc\_1 (k5\_finsub\_1 \\ & X0) (k5\_finsub\_1 X0))) \Rightarrow (k5\_binop\_1 (k2\_zfmisc\_1 (k5\_finsub\_1 \\ & X0) (k5\_finsub\_1 X0)) X1 X2 X3 = k1\_normform (k5\_finsub\_1 X0) (k5\_finsub\_1 \\ & X0) X2 X3)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v1\_xboole\_0 \\ & X0)\wedge(v4\_finsub\_1 X0))\wedge(((\neg v1\_xboole\_0 X1)\wedge(v4\_finsub\_1 X1))\wedge \\ & ((m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1))\wedge(m1\_subset\_1 X3 (k2\_zfmisc\_1 \\ & X0 X1))))))\Rightarrow(k1\_normform X0 X1 X2 X3 = k1\_normform X0 X1 X3 X2) \end{aligned} \tag{10}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.\forall X1.(m1\_subset\_1 X1 (k2\_zfmisc\_1 (k5\_finsub\_1 \\ & X0) (k5\_finsub\_1 X0)))\Rightarrow(r1\_normform (k5\_finsub\_1 X0) (k5\_finsub\_1 \\ & X0) (k4\_binop\_1 (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)) \\ & (k5\_normform X0)) X1) \end{aligned}$$