

t20_rewrite3

(TMH9zAz5uQSJT53Ju2qszoHJfhDy4H7uc5q)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k8_afinsq_1 : \iota \Rightarrow \iota$ be given. Let $l1_rewrite3 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_rewrite3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_struct_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $u1_rewrite3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $r1_rewrite3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_catalan2 : \iota \Rightarrow \iota$ be given. Let $k1_flang_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (l1_rewrite3 \\ & X4 X0) \Rightarrow ((r1_rewrite3 X0 X4 X1 X2 X3) \Rightarrow ((r1_struct_0 X4 X1) \wedge ((X2 \in \\ & X0) \wedge ((r1_struct_0 X4 X3) \wedge ((X1 \in k9_xtuple_0 (k9_xtuple_0 (u1_rewrite3 \\ & X0 X4)))) \wedge ((X2 \in k10_xtuple_0 (k9_xtuple_0 (u1_rewrite3 X0 X4)))) \wedge \\ & (X3 \in k10_xtuple_0 (u1_rewrite3 X0 X4)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. k3_catalan2 X0 = k8_afinsq_1 X0 \quad (3)$$

Assume the following.

$$\forall X0. \neg v1_xboole_0 (k8_afinsq_1 X0) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((m1_subset_1 X1 (k3_catalan2 \\ & X0)) \wedge (m1_subset_1 X2 (k3_catalan2 X0))) \Rightarrow (m1_subset_1 (k1_flang_1 \\ & X0 X1 X2) (k3_catalan2 X0)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 \\
& \quad (k8_afinsq_1 X0))) \Rightarrow (\forall X2.(l1_rewrite3 X2 X1) \Rightarrow (\forall X3. \\
& \quad \forall X4.\forall X5.\forall X6.(r2_rewrite3 X0 X1 X2 X3 X4 X5 X6) \Leftrightarrow \\
& \quad (\exists X7.(m1_subset_1 X7 (k8_afinsq_1 X0)) \wedge (\exists X8.(m1_subset_1 \\
& \quad X8 (k8_afinsq_1 X0)) \wedge ((X7 = X6) \wedge ((r1_rewrite3 X1 X2 X3 X8 X5) \wedge (X4 = \\
& \quad k1_flang_1 X0 X8 X7)))))))))
\end{aligned} \tag{6}$$

Theorem 1

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(\neg v1_xboole_0 \\
& \quad X4) \Rightarrow (\forall X5.(m1_subset_1 X5 (k1_zfmisc_1 (k8_afinsq_1 X4))) \Rightarrow \\
& (\forall X6.(l1_rewrite3 X6 X5) \Rightarrow ((r2_rewrite3 X4 X5 X6 X0 X1 X2 X3) \Rightarrow \\
& ((r1_struct_0 X6 X0) \wedge (r1_struct_0 X6 X2) \wedge ((X1 \in k8_afinsq_1 X4) \wedge \\
& ((X3 \in k8_afinsq_1 X4) \wedge ((X0 \in k9_xtuple_0 (k9_xtuple_0 (u1_rewrite3 \\
& \quad X5 X6))) \wedge (X2 \in k10_xtuple_0 (u1_rewrite3 X5 X6))))))))))
\end{aligned}$$