

t21_anproj_2
(TMMY9QAued1TSfGQqeEUoZTCWi1U4GBEN7U)

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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 $k9_domain_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $k9_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funcsdom : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_funcsdom : \iota \Rightarrow \iota$ be given. Let $k2_funcsdom : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_funcsdom : \iota \Rightarrow \iota$ be given. Let $k1_domain_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_funcsdom : \iota \Rightarrow \iota$ be given. Let $k6_numbers : \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_1 : \iota$ be given. Let $k1_funct_1 :$

$\iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(m2_funct_2 X1 X0 k1_numbers \\
& (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X2.(m2_funct_2 X2 X0 k1_numbers \\
& (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X3.(m2_funct_2 X3 X0 k1_numbers \\
& (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X4.(m2_funct_2 X4 X0 k1_numbers \\
& (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X5.(m1_subset_1 X5 X0) \Rightarrow \\
& (\forall X6.(m1_subset_1 X6 X0) \Rightarrow (\forall X7.(m1_subset_1 X7 X0) \Rightarrow \\
& (\forall X8.(m1_subset_1 X8 X0) \Rightarrow (((X0 = k9_domain_1 X0 X5 X6 X7 X8) \wedge \\
& ((k3_funct_2 X0 k1_numbers X1 X5 = np_1) \wedge ((\forall X9.(X9 \in X0) \Rightarrow \\
& ((X9 = X5) \vee (k1_funct_1 X1 X9 = k6_numbers))) \wedge ((k3_funct_2 X0 k1_numbers \\
& X2 X6 = np_1) \wedge ((\forall X9.(X9 \in X0) \Rightarrow ((X9 = X6) \vee (k1_funct_1 X2 X9 = \\
& k6_numbers))) \wedge ((k3_funct_2 X0 k1_numbers X3 X7 = np_1) \wedge ((\forall X9. \\
& (X9 \in X0) \Rightarrow ((X9 = X7) \vee (k1_funct_1 X3 X9 = k6_numbers))) \wedge ((k3_funct_2 \\
& X0 k1_numbers X4 X8 = np_1) \wedge ((\forall X9.(X9 \in X0) \Rightarrow ((X9 = X8) \vee (k1_funct_1 \\
& X4 X9 = k6_numbers)))))))))) \Rightarrow ((X5 = X6) \vee ((X5 = X7) \vee ((X5 = X8) \vee (\\
& (X6 = X7) \vee ((X6 = X8) \vee ((X7 = X8) \vee (\forall X9.(m2_funct_2 X9 X0 k1_numbers \\
& (k9_funct_2 X0 k1_numbers)) \Rightarrow (\exists X10.(m1_subset_1 X10 k1_numbers) \wedge \\
& (\exists X11.(m1_subset_1 X11 k1_numbers) \wedge (\exists X12.(m1_subset_1 \\
& X12 k1_numbers) \wedge (\exists X13.(m1_subset_1 X13 k1_numbers) \wedge (\\
& r2_funct_2 X0 k1_numbers X9 (k1_funcsdom X0 k1_numbers (k5_funcsdom \\
& X0) (k1_funcsdom X0 k1_numbers (k5_funcsdom X0) (k1_funcsdom X0 \\
& k1_numbers (k5_funcsdom X0) (k2_funcsdom X0 k1_numbers k1_numbers \\
& (k9_funct_2 X0 k1_numbers) (k7_funcsdom X0) (k1_domain_1 k1_numbers \\
& (k9_funct_2 X0 k1_numbers) X10 X1)) (k2_funcsdom X0 k1_numbers \\
& k1_numbers (k9_funct_2 X0 k1_numbers) (k7_funcsdom X0) (k1_domain_1 \\
& k1_numbers (k9_funct_2 X0 k1_numbers) X11 X2))) (k2_funcsdom X0 \\
& k1_numbers k1_numbers (k9_funct_2 X0 k1_numbers) (k7_funcsdom \\
& X0) (k1_domain_1 k1_numbers (k9_funct_2 X0 k1_numbers) X12 X3))) \\
& (k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 k1_numbers) \\
& (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 X0 k1_numbers) \\
& X13 X4)))))))))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(m2_funct_2 X1 X0 k1_numbers \\
& (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X2.(m2_funct_2 X2 X0 k1_numbers \\
& (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X3.(m2_funct_2 X3 X0 k1_numbers \\
& (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X4.(m2_funct_2 X4 X0 k1_numbers \\
& (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X5.(m1_subset_1 X5 X0) \Rightarrow \\
& (\forall X6.(m1_subset_1 X6 X0) \Rightarrow (\forall X7.(m1_subset_1 X7 X0) \Rightarrow \\
& (\forall X8.(m1_subset_1 X8 X0) \Rightarrow (((k3_funct_2 X0 k1_numbers X1 \\
& X5 = np_1) \wedge ((\forall X9.(X9 \in X0) \Rightarrow ((X9 = X5) \vee (k1_funct_1 X1 X9 = \\
& k6_numbers))) \wedge ((k3_funct_2 X0 k1_numbers X2 X6 = np_1) \wedge ((\forall X9. \\
& (X9 \in X0) \Rightarrow ((X9 = X6) \vee (k1_funct_1 X2 X9 = k6_numbers))) \wedge ((k3_funct_2 \\
& X0 k1_numbers X3 X7 = np_1) \wedge ((\forall X9.(X9 \in X0) \Rightarrow ((X9 = X7) \vee (k1_funct_1 \\
& X3 X9 = k6_numbers))) \wedge ((k3_funct_2 X0 k1_numbers X4 X8 = np_1) \wedge \\
& (\forall X9.(X9 \in X0) \Rightarrow ((X9 = X8) \vee (k1_funct_1 X4 X9 = k6_numbers))))))))) \Rightarrow \\
& ((X5 = X6) \vee ((X5 = X7) \vee ((X5 = X8) \vee ((X6 = X7) \vee ((X6 = X8) \vee ((X7 = X8) \vee (\\
& \forall X9.(m1_subset_1 X9 k1_numbers) \Rightarrow (\forall X10.(m1_subset_1 \\
& X10 k1_numbers) \Rightarrow (\forall X11.(m1_subset_1 X11 k1_numbers) \Rightarrow (\\
& \forall X12.(m1_subset_1 X12 k1_numbers) \Rightarrow ((r2_funct_2 X0 k1_numbers \\
& (k1_funcsdom X0 k1_numbers (k5_funcsdom X0) (k1_funcsdom X0 k1_numbers \\
& (k5_funcsdom X0) (k1_funcsdom X0 k1_numbers (k5_funcsdom X0) (\\
& k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 k1_numbers) \\
& (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 X0 k1_numbers) \\
& X9 X1)) (k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 k1_numbers) \\
& (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 X0 k1_numbers) \\
& X10 X2))) (k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 \\
& k1_numbers) (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 \\
& X0 k1_numbers) X11 X3))) (k2_funcsdom X0 k1_numbers k1_numbers \\
& (k9_funct_2 X0 k1_numbers) (k7_funcsdom X0) (k1_domain_1 k1_numbers \\
& (k9_funct_2 X0 k1_numbers) X12 X4))) (k8_funcsdom X0) \Rightarrow ((X9 = k6_numbers) \wedge \\
& ((X10 = k6_numbers) \wedge ((X11 = k6_numbers) \wedge (X12 = k6_numbers))))))))) \\
& \hspace{15em} (2)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 X0) \Rightarrow \\
& (\exists X2.(m2_funct_2 X2 X0 k1_numbers (k9_funct_2 X0 k1_numbers)) \wedge \\
& ((k3_funct_2 X0 k1_numbers X2 X1 = np_1) \wedge (\forall X3.(X3 \in X0) \Rightarrow \\
& ((X3 = X1) \vee (k1_funct_1 X2 X3 = k6_numbers)))))) \\
& \hspace{15em} (3)
\end{aligned}$$

Theorem 1

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 X0) \Rightarrow \\
& (\forall X2.(m1_subset_1 X2 X0) \Rightarrow (\forall X3.(m1_subset_1 X3 X0) \Rightarrow \\
& (\forall X4.(m1_subset_1 X4 X0) \Rightarrow (\neg(X0 = k9_domain_1 X0 X1 X2 X3 X4) \wedge \\
& ((X1 \neq X2) \wedge ((X1 \neq X3) \wedge ((X1 \neq X4) \wedge ((X2 \neq X3) \wedge ((X2 \neq X4) \wedge ((X3 \neq X4) \wedge \\
& \forall X5.(m2_funct_2 X5 X0 k1_numbers (k9_funct_2 X0 k1_numbers)) \Rightarrow \\
& (\forall X6.(m2_funct_2 X6 X0 k1_numbers (k9_funct_2 X0 k1_numbers)) \Rightarrow \\
& (\forall X7.(m2_funct_2 X7 X0 k1_numbers (k9_funct_2 X0 k1_numbers)) \Rightarrow \\
& (\forall X8.(m2_funct_2 X8 X0 k1_numbers (k9_funct_2 X0 k1_numbers)) \Rightarrow \\
& (\neg(\forall X9.(m1_subset_1 X9 k1_numbers) \Rightarrow (\forall X10.(m1_subset_1 \\
& X10 k1_numbers) \Rightarrow (\forall X11.(m1_subset_1 X11 k1_numbers) \Rightarrow (\\
& \forall X12.(m1_subset_1 X12 k1_numbers) \Rightarrow ((r2_funct_2 X0 k1_numbers \\
& (k1_funcsdom X0 k1_numbers (k5_funcsdom X0) (k1_funcsdom X0 k1_numbers \\
& (k5_funcsdom X0) (k1_funcsdom X0 k1_numbers (k5_funcsdom X0) (\\
& k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 k1_numbers) \\
& (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 X0 k1_numbers) \\
& X9 X5)) (k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 k1_numbers) \\
& (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 X0 k1_numbers) \\
& X10 X6))) (k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 \\
& k1_numbers) (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 \\
& X0 k1_numbers) X11 X7))) (k2_funcsdom X0 k1_numbers k1_numbers \\
& (k9_funct_2 X0 k1_numbers) (k7_funcsdom X0) (k1_domain_1 k1_numbers \\
& (k9_funct_2 X0 k1_numbers) X12 X8))) (k8_funcsdom X0) \Rightarrow ((X9 = k6_numbers) \wedge \\
& ((X10 = k6_numbers) \wedge ((X11 = k6_numbers) \wedge (X12 = k6_numbers)))))) \wedge \\
& (\forall X9.(m2_funct_2 X9 X0 k1_numbers (k9_funct_2 X0 k1_numbers)) \Rightarrow \\
& (\exists X10.(m1_subset_1 X10 k1_numbers) \wedge (\exists X11.(m1_subset_1 \\
& X11 k1_numbers) \wedge (\exists X12.(m1_subset_1 X12 k1_numbers) \wedge (\\
& \exists X13.(m1_subset_1 X13 k1_numbers) \wedge (r2_funct_2 X0 k1_numbers \\
& X9 (k1_funcsdom X0 k1_numbers (k5_funcsdom X0) (k1_funcsdom X0 \\
& k1_numbers (k5_funcsdom X0) (k1_funcsdom X0 k1_numbers (k5_funcsdom \\
& X0) (k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 k1_numbers) \\
& (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 X0 k1_numbers) \\
& X10 X5)) (k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 k1_numbers) \\
& (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 X0 k1_numbers) \\
& X11 X6))) (k2_funcsdom X0 k1_numbers k1_numbers (k9_funct_2 X0 \\
& k1_numbers) (k7_funcsdom X0) (k1_domain_1 k1_numbers (k9_funct_2 \\
& X0 k1_numbers) X12 X7))) (k2_funcsdom X0 k1_numbers k1_numbers \\
& (k9_funct_2 X0 k1_numbers) (k7_funcsdom X0) (k1_domain_1 k1_numbers \\
& (k9_funct_2 X0 k1_numbers) X13 X8)))))))))
\end{aligned}$$