# t229_member_1 <br> (TML96rrbZDkRcSLcCrm3fPyzJPVwKkN7aMF) 

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Let $v 1_{\_}$membered : $\iota \Rightarrow 0$ be given. Let $v 1 \_x c m p l x_{-} 0: \iota \Rightarrow 0$ be given. Let $r 1 \_$tarski : $\iota \Rightarrow \iota \Rightarrow 0$ be given. Let k27_member_1 : $\iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k 6 \_n u m b e r s: \iota$ be given. Let $k 7$ _member_1 $: \iota \Rightarrow \iota$ be given. Let $k 13 \_m e m b e r \_1:$ $\iota \Rightarrow \iota \Rightarrow \iota$ be given. Let k25_member_1: $\iota \Rightarrow \iota \Rightarrow \iota$ be given. Let k1_tarski: $\iota \Rightarrow \iota$ be given. Let $k 15$ _member_1 : $\iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.
$\forall X 0 .\left(v 1 \_m e m b e r e d ~ X 0\right) \Rightarrow\left(\forall X 1 .\left(v 1 \_m e m b e r e d ~ X 1\right) \Rightarrow\left(k 7 \_m e m b e r \_1\right.\right.$ (k13_member_1 X0 X1) = k13_member_1 (k7_member_1 X0) (k7_member_1 X1)))

Assume the following.
$\forall X 0 .\left(v 1 \_\right.$membered $\left.X 0\right) \Rightarrow\left(\forall X 1 .\left(v 1 \_\right.\right.$membered $\left.X 1\right) \Rightarrow(($
$r 1 \_$tarski $\left.X 0 X 1\right) \Leftrightarrow\left(r 1 \_\right.$tarski $\left(k 7 \_\right.$_member_1 X0) $\left(k 7 \_\right.$_member_1 $\left.\left.\left.\left.X 1\right)\right)\right)\right)$

Assume the following.

$$
\forall X 0 .\left(v 1 \_m e m b e r e d ~ X 0\right) \Rightarrow\left(\forall X 1 .\left(v 1 \_m e m b e r e d ~ X 1\right) \Rightarrow(\forall X 2 \text {. }\right.
$$

( $v 1 \_x c m p l x \_0$ X2) $\Rightarrow\left(\left(r 1 \_t a r s k i\left(k 25 \_m e m b e r \_1 ~ X 0 ~ X 2\right) ~\left(k 25 \_m e m b e r \_1 ~\right.\right.\right.$

$$
\begin{equation*}
\left.\left.\left.X 1 \quad X 2)) \Rightarrow\left(\left(X 2=k 6 \_n u m b e r s\right) \vee\left(r 1 \_t a r s k i \quad X 0 X 1\right)\right)\right)\right)\right) \tag{3}
\end{equation*}
$$

Assume the following.

$$
\begin{equation*}
\left.\forall X 0 . \forall X 1 .\left(v 1 \_m e m b e r e d ~ X 1\right) \Rightarrow \underset{X 0)}{\left(\left(\left(r 1 \_t a r s k i\right.\right.\right.} X 0 X 1\right) \Rightarrow\left(v 1 \_m e m b e r e d ~\right. \tag{4}
\end{equation*}
$$

Assume the following.

$$
\begin{equation*}
\forall X 0 .\left(v 1 \_m e m b e r e d X 0\right) \Rightarrow\left(k 7 \_m e m b e r \_1\left(k 7 \_m e m b e r \_1 X 0\right)=X 0\right) \tag{5}
\end{equation*}
$$

Assume the following.

$$
\begin{equation*}
\forall X 0 .\left(v 1 \_x c m p l x \_0 X 0\right) \Rightarrow\left(v 1 \_m e m b e r e d\left(k 1 \_t a r s k i X 0\right)\right) \tag{6}
\end{equation*}
$$

Assume the following.

$$
\begin{gather*}
\forall X 0 . \forall X 1 .\left(\left(v 1 \_m e m b e r e d \quad X 0\right) \wedge\left(v 1 \_x c m p l x \_0 X 1\right)\right) \Rightarrow(  \tag{7}\\
\left.v 1 \_m e m b e r e d ~\left(k 27 \_m e m b e r \_1 X 0 X 1\right)\right)
\end{gather*}
$$

Assume the following.

$$
\begin{equation*}
\forall X 0 .\left(v 1 \_m e m b e r e d \quad X 0\right) \Rightarrow\left(v 1 \_m e m b e r e d\left(k 7 \_m e m b e r \_1 X 0\right)\right) \tag{8}
\end{equation*}
$$

Assume the following.

$$
\begin{gather*}
\forall X 0 .\left(v 1 \_m e m b e r e d X 0\right) \Rightarrow\left(\forall X 1 .\left(v 1 \_x c m p l x \_0 X 1\right) \Rightarrow\left(k 27 \_m e m b e r \_1\right.\right. \\
\left.\left.X 0 X 1=k 15 \_m e m b e r \_1 X 0\left(k 1 \_t a r s k i X 1\right)\right)\right) \tag{9}
\end{gather*}
$$

Assume the following.

$$
\begin{gather*}
\forall X 0 .\left(v 1 \_m e m b e r e d ~ X 0\right) \Rightarrow\left(\forall X 1 .\left(v 1 \_x c m p l x \_0 X 1\right) \Rightarrow\left(k 25 \_m e m b e r \_1\right.\right. \\
\left.\left.X 0 X 1=k 15 \_m e m b e r \_1\left(k 1 \_t a r s k i X 1\right) X 0\right)\right) \tag{10}
\end{gather*}
$$

Assume the following.

$$
\begin{gather*}
\forall X 0 .\left(v 1 \_m e m b e r e d ~ X 0\right) \Rightarrow\left(\forall X 1 .\left(v 1 \_m e m b e r e d X 1\right) \Rightarrow\left(k 15 \_m e m b e r \_1\right.\right. \\
\left.\left.X 0 X 1=k 13 \_m e m b e r \_1 X 0\left(k 7 \_m e m b e r \_1 X 1\right)\right)\right) \tag{11}
\end{gather*}
$$

Assume the following.

$$
\begin{align*}
& \forall X 0 . \forall X 1 .\left(\left(v 1 \_m e m b e r e d X 0\right) \wedge\left(v 1 \_m e m b e r e d ~ X 1\right)\right) \Rightarrow(  \tag{12}\\
& \left.k 13 \_m e m b e r \_1 X 0 X 1=k 13 \_m e m b e r \_1 X 1 X 0\right)
\end{align*}
$$

## Theorem 1

$\forall X 0 .\left(v 1 \_m e m b e r e d ~ X 0\right) \Rightarrow\left(\forall X 1\right.$. $\left(v 1 \_\right.$membered $\left.X 1\right) \Rightarrow(\forall X 2$.
$\left(v 1 \_x c m p l x \_0 \quad X 2\right) \Rightarrow\left(\left(r 1 \_t a r s k i \quad\left(k 27 \_m e m b e r \_1 X 0 X 2\right)\left(k 27 \_m e m b e r \_1\right.\right.\right.$ $X 1 \quad X 2)) \Rightarrow\left(\left(X 2=k 6 \_\right.\right.$numbers $) \vee\left(r 1 \_\right.$tarski $\left.\left.\left.\left.\left.X 0 \quad X 1\right)\right)\right)\right)\right)$

