

## t35\_limfunc4

(TMPYj124PZW7d5rfVqGSPiYpZ8jSh4QLrAK)

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Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_limfunc3 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_limfunc1 : \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_limfunc2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_seq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r5\_limfunc2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.((v1\_funct\_1 \\
 & X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers)))) \Rightarrow \\
 & ((r2\_limfunc2 X1 X0) \Leftrightarrow ((\forall X2.(m1\_subset\_1 X2 k1\_numbers) \Rightarrow \\
 & (\neg(\neg r1\_xxreal\_0 X0 X2)) \wedge (\forall X3.(m1\_subset\_1 X3 k1\_numbers) \Rightarrow \\
 & (\neg(\neg r1\_xxreal\_0 X3 X2)) \wedge (\neg r1\_xxreal\_0 X0 X3) \wedge (X3 \in k1\_relset\_1 \\
 & k1\_numbers X1)))))) \wedge (\forall X2.(m1\_subset\_1 X2 k1\_numbers) \Rightarrow \\
 & (\exists X3.(m1\_subset\_1 X3 k1\_numbers) \wedge (\neg r1\_xxreal\_0 X0 X3) \wedge \\
 & (\forall X4.(m1\_subset\_1 X4 k1\_numbers) \Rightarrow (\neg(\neg r1\_xxreal\_0 X4 X3) \wedge \\
 & (\neg r1\_xxreal\_0 X0 X4) \wedge ((X4 \in k1\_relset\_1 k1\_numbers X1) \wedge (r1\_xxreal\_0 \\
 & (k1\_seq\_1 X1 X4) X2))))))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.((v1\_funct\_1 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
 & k1\_numbers k1\_numbers)))) \Rightarrow ((v4\_limfunc1 X0) \Leftrightarrow ((\forall X1.( \\
 & m1\_subset\_1 X1 k1\_numbers) \Rightarrow (\exists X2.(m1\_subset\_1 X2 k1\_numbers) \wedge \\
 & ((\neg r1\_xxreal\_0 X2 X1) \wedge (X2 \in k1\_relset\_1 k1\_numbers X0)))) \wedge (\forall X1. \\
 & (m1\_subset\_1 X1 k1\_numbers) \Rightarrow (\exists X2.(m1\_subset\_1 X2 k1\_numbers) \wedge \\
 & (\forall X3.(m1\_subset\_1 X3 k1\_numbers) \Rightarrow (\neg(\neg r1\_xxreal\_0 X3 X2) \wedge \\
 & ((X3 \in k1\_relset\_1 k1\_numbers X0) \wedge (r1\_xxreal\_0 (k1\_seq\_1 X0 X3) \\
 & X1))))))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.((v1\_funct\_1 \\
& X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))) \Rightarrow \\
& (\forall X2.((v1\_funct\_1 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& k1\_numbers k1\_numbers)))) \Rightarrow (((r5\_limfunc2 X1 X0) \wedge ((v4\_limfunc1 \\
& X2) \wedge (\forall X3.(m1\_subset\_1 X3 k1\_numbers) \Rightarrow (\neg(\neg r1\_xxreal\_0 \\
& X3 X0) \wedge (\forall X4.(m1\_subset\_1 X4 k1\_numbers) \Rightarrow (\neg(\neg r1\_xxreal\_0 \\
& X3 X4) \wedge (\neg r1\_xxreal\_0 X4 X0) \wedge (X4 \in k1\_relset\_1 k1\_numbers (k1\_partfun1 \\
& k1\_numbers k1\_numbers k1\_numbers k1\_numbers X1 X2)))))) \Rightarrow ( \\
& r5\_limfunc2 (k1\_partfun1 k1\_numbers k1\_numbers k1\_numbers k1\_numbers \\
& X1 X2) X0)))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.((v1\_funct\_1 \\
& X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))) \Rightarrow \\
& ((r2\_limfunc3 X1 X0) \Leftrightarrow ((r2\_limfunc2 X1 X0) \wedge (r5\_limfunc2 X1 X0)))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.((v1\_funct\_1 \\
& X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))) \Rightarrow \\
& (\forall X2.((v1\_funct\_1 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& k1\_numbers k1\_numbers)))) \Rightarrow (((r2\_limfunc2 X1 X0) \wedge ((v4\_limfunc1 \\
& X2) \wedge (\forall X3.(m1\_subset\_1 X3 k1\_numbers) \Rightarrow (\neg(\neg r1\_xxreal\_0 \\
& X0 X3) \wedge (\forall X4.(m1\_subset\_1 X4 k1\_numbers) \Rightarrow (\neg(\neg r1\_xxreal\_0 \\
& X4 X3) \wedge (\neg r1\_xxreal\_0 X0 X4) \wedge (X4 \in k1\_relset\_1 k1\_numbers (k1\_partfun1 \\
& k1\_numbers k1\_numbers k1\_numbers k1\_numbers X1 X2)))))) \Rightarrow ( \\
& r2\_limfunc2 (k1\_partfun1 k1\_numbers k1\_numbers k1\_numbers k1\_numbers \\
& X1 X2) X0)))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& (((v1\_funct\_1 X4) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 X1)))) \wedge ((v1\_funct\_1 X5) \wedge (m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X2 X3)))) \Rightarrow ((v1\_funct\_1 (k1\_partfun1 X0 X1 X2 X3 X4 X5)) \wedge (m1\_subset\_1 \\
& (k1\_partfun1 X0 X1 X2 X3 X4 X5) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X3))))
\end{aligned} \tag{6}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.((v1\_funct\_1 \\ X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))) \Rightarrow \\ & (\forall X2.((v1\_funct\_1 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ k1\_numbers k1\_numbers)))) \Rightarrow ((r2\_limfunc3 X1 X0) \wedge ((v4\_limfunc1 \\ X2) \wedge (\forall X3.(m1\_subset\_1 X3 k1\_numbers) \Rightarrow (\forall X4.(m1\_subset\_1 \\ X4 k1\_numbers) \Rightarrow (\neg(\neg r1\_xxreal\_0 X0 X3) \wedge (\neg r1\_xxreal\_0 X4 X0) \wedge \\ (\forall X5.(m1\_subset\_1 X5 k1\_numbers) \Rightarrow (\forall X6.(m1\_subset\_1 \\ X6 k1\_numbers) \Rightarrow (\neg(\neg r1\_xxreal\_0 X5 X3) \wedge (\neg r1\_xxreal\_0 X0 X5) \wedge \\ ((X5 \in k1\_relset\_1 k1\_numbers (k1\_partfun1 k1\_numbers k1\_numbers \\ k1\_numbers k1\_numbers X1 X2)) \wedge (\neg r1\_xxreal\_0 X4 X6) \wedge (\neg r1\_xxreal\_0 \\ X6 X0) \wedge (X6 \in k1\_relset\_1 k1\_numbers (k1\_partfun1 k1\_numbers k1\_numbers \\ k1\_numbers k1\_numbers X1 X2)))))))))) \Rightarrow (r2\_limfunc3 (k1\_partfun1 \\ k1\_numbers k1\_numbers k1\_numbers k1\_numbers X1 X2) X0))) \end{aligned}$$