

# t39\_pdiff\_5 (TMKUjEBn- BEnnG7goHTRsoECWPoDY64gFqSH)

October 27, 2020

Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_euclid : \iota \Rightarrow \iota$  be given. Let  $np\_3 : \iota$  be given. Let  $k1\_numbers : \iota$  be given. Let  $m2\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_rcomp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_seq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_pdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r3\_pdiff\_5 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_pdiff\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_pdiff\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $v2\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v1\_fdiff\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_numbers : \iota$  be given. Let  $v3\_funct\_1 : \iota \Rightarrow o$  be given. Let  $k2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $k3\_valued\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_comseq\_2 : \iota \Rightarrow o$  be given. Let  $k20\_valued\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k37\_valued\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k47\_valued\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_pdiff\_5 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_seq\_2 : \iota \Rightarrow \iota$  be given. Let  $k11\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_fdiff\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r3\_pdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_rvsum\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_fdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $v2\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v3\_fdiff\_1 : \iota \Rightarrow o$  be given. Let  $v2\_fdiff\_1 : \iota \Rightarrow o$  be given. Let  $k9\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((v1\_funct\_1 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
 & \quad (k1\_euclid np\_3) k1\_numbers)))) \Rightarrow (\forall X1.(m2\_finseq\_2 X1 \\
 & \quad k1\_numbers (k1\_euclid np\_3)) \Rightarrow ((\exists X2.(m1\_subset\_1 X2 k1\_numbers) \wedge \\
 & \quad (\exists X3.(m1\_subset\_1 X3 k1\_numbers) \wedge (\exists X4.(m1\_subset\_1 \\
 & \quad X4 k1\_numbers) \wedge ((X1 = k11\_finseq\_1 X2 X3 X4) \wedge (r1\_fdiff\_1 (k1\_pdiff\_2 \\
 & \quad np\_3 np\_3 X0 X1) X4)))))) \Leftrightarrow (r3\_pdiff\_1 np\_3 np\_3 X0 X1))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.((v2\_relat\_1 \\
& X1) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 k5\_numbers k1\_numbers) \wedge \\
& ((v1\_fdiff\_1 X1 k6\_numbers) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& k5\_numbers k1\_numbers)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge \\
& ((v3\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 k5\_numbers k1\_numbers) \wedge (m1\_subset\_1 \\
& X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers k1\_numbers)))))) \Rightarrow (( \\
& k2\_reset\_1 k1\_numbers X2 = k1\_tarski X0) \Rightarrow ((v2\_comseq\_2 X2) \wedge ( \\
& (k2\_seq\_2 X2 = X0) \wedge ((v2\_comseq\_2 (k3\_valued\_1 k5\_numbers k1\_numbers \\
& k1\_numbers X1 X2)) \wedge (k2\_seq\_2 (k3\_valued\_1 k5\_numbers k1\_numbers \\
& k1\_numbers X1 X2) = X0))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.(m1\_subset\_1 \\
& X1 k1\_numbers) \Rightarrow (\forall X2.(m1\_subset\_1 X2 k1\_numbers) \Rightarrow (\forall X3. \\
& (m2\_finseq\_2 X3 k1\_numbers (k1\_euclid np\_3)) \Rightarrow (\forall X4.(( \\
& v1\_funct\_1 X4) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_euclid \\
& np\_3) k1\_numbers)))) \Rightarrow (((X3 = k11\_finseq\_1 X0 X1 X2) \wedge (r3\_pdiff\_5 \\
& X4 X3)) \Rightarrow (r1\_fdiff\_1 (k1\_pdiff\_2 np\_3 np\_3 (k1\_pdiff\_3 np\_1 \\
& np\_3 X4) X3) X2))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& (k1\_reset\_1 (k1\_euclid np\_3) (k1\_pdiff\_1 np\_3 np\_3) = k1\_euclid \\
& np\_3) \wedge ((k1\_rvsum\_1 (k1\_pdiff\_1 np\_3 np\_3) = k1\_numbers) \wedge ( \\
& \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.(m1\_subset\_1 \\
& X1 k1\_numbers) \Rightarrow (\forall X2.(m1\_subset\_1 X2 k1\_numbers) \Rightarrow (k1\_seq\_1 \\
& (k1\_pdiff\_1 np\_3 np\_3) (k11\_finseq\_1 X0 X1 X2) = X2))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m2\_finseq\_2 X0 k1\_numbers (k1\_euclid np\_3)) \Rightarrow (\forall X1. \\
& ((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 ( \\
& k1\_euclid np\_3) k1\_numbers)))) \Rightarrow ((r3\_pdiff\_5 X1 X0) \Leftrightarrow (r3\_pdiff\_1 \\
& np\_3 np\_3 (k1\_pdiff\_3 np\_1 np\_3 X1) X0))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.(m1\_subset\_1 \\
& X1 k1\_numbers) \Rightarrow (\forall X2.(m1\_subset\_1 X2 k1\_numbers) \Rightarrow (\forall X3. \\
& (m2\_finseq\_2 X3 k1\_numbers (k1\_euclid np\_3)) \Rightarrow (\forall X4.(( \\
& v1\_funct\_1 X4) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_euclid \\
& np\_3) k1\_numbers)))) \Rightarrow (((X3 = k11\_finseq\_1 X0 X1 X2) \wedge (r3\_pdiff\_5 \\
& X4 X3)) \Rightarrow (k3\_pdiff\_5 X4 X3 = k1\_fdiff\_1 (k1\_pdiff\_2 np\_3 np\_3 ( \\
& k1\_pdiff\_3 np\_1 np\_3 X4) X3) X2))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_funct\_1 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& \quad k1\_numbers k1\_numbers)))) \Rightarrow (\forall X1.(v1\_xreal\_0 X1) \Rightarrow (\forall X2. \\
& \quad (m1\_rcomp\_1 X2 X1) \Rightarrow (((r1\_fdiff\_1 X0 X1) \wedge (r1\_tarski X2 (k1\_relset\_1 \\
& \quad \quad k1\_numbers X0))) \Rightarrow (\forall X3.((v2\_relat\_1 X3) \wedge ((v1\_funct\_1 \\
& X3) \wedge ((v1\_funct\_2 X3 k5\_numbers k1\_numbers) \wedge ((v1\_fdiff\_1 X3 k6\_numbers) \wedge \\
& \quad (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers k1\_numbers)))))) \Rightarrow \\
& \quad (\forall X4.((v1\_funct\_1 X4) \wedge ((v3\_funct\_1 X4) \wedge ((v1\_funct\_2 \\
& X4 k5\_numbers k1\_numbers) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& \quad k5\_numbers k1\_numbers)))))) \Rightarrow (((k2\_relset\_1 k1\_numbers X4 = k1\_tarski \\
& \quad X1) \wedge (r1\_tarski (k2\_relset\_1 k1\_numbers (k3\_valued\_1 k5\_numbers \\
& \quad \quad k1\_numbers k1\_numbers X3 X4)) X2) \Rightarrow ((v2\_comseq\_2 (k20\_valued\_1 \\
& k5\_numbers k1\_numbers k1\_numbers (k37\_valued\_1 k5\_numbers k1\_numbers \\
& \quad X3) (k47\_valued\_1 k5\_numbers k1\_numbers k1\_numbers (k8\_funct\_2 \\
& k5\_numbers k1\_numbers k1\_numbers (k3\_valued\_1 k5\_numbers k1\_numbers \\
& \quad k1\_numbers X3 X4) X0) (k8\_funct\_2 k5\_numbers k1\_numbers k1\_numbers \\
& \quad X4 X0))) \wedge (k1\_fdiff\_1 X0 X1 = k2\_seq\_2 (k20\_valued\_1 k5\_numbers \\
& \quad k1\_numbers k1\_numbers (k37\_valued\_1 k5\_numbers k1\_numbers X3) \\
& \quad (k47\_valued\_1 k5\_numbers k1\_numbers k1\_numbers (k8\_funct\_2 k5\_numbers \\
& \quad k1\_numbers k1\_numbers (k3\_valued\_1 k5\_numbers k1\_numbers k1\_numbers \\
& \quad X3 X4) X0) (k8\_funct\_2 k5\_numbers k1\_numbers k1\_numbers X4 X0)))))))))) \Rightarrow \\
& \hspace{15em} (7)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& ((v2\_xxreal\_0 np\_3) \wedge (m2\_subset\_1 np\_3 k1\_numbers k5\_numbers)) \wedge \\
& ((m1\_subset\_1 np\_3 k5\_numbers) \wedge (m1\_subset\_1 np\_3 k1\_numbers)) \hspace{10em} (8)
\end{aligned}$$

Assume the following.

$$-v1\_xboole\_0 np\_3 \hspace{15em} (9)$$

Assume the following.

$$\begin{aligned}
& ((v2\_xxreal\_0 np\_1) \wedge (m2\_subset\_1 np\_1 k1\_numbers k5\_numbers)) \wedge \\
& ((m1\_subset\_1 np\_1 k5\_numbers) \wedge (m1\_subset\_1 np\_1 k1\_numbers)) \hspace{10em} (10)
\end{aligned}$$

Assume the following.

$$\forall X0. \forall X1. (m1\_finseq\_2 X1 X0) \Rightarrow (\forall X2. (m2\_finseq\_2 X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1)) \hspace{10em} (11)$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \hspace{15em} (12)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \hspace{15em} (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1\_subset\_1 X0 k5\_numbers)\wedge \\ & (((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 k5\_numbers)\wedge((v1\_funct\_1 \\ & X2)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_euclid X1) \\ & k1\_numbers))))))\Rightarrow((v1\_funct\_1 (k1\_pdiff\_3 X0 X1 X2))\wedge((v1\_funct\_2 \\ & (k1\_pdiff\_3 X0 X1 X2) (k1\_euclid X1) k1\_numbers)\wedge(m1\_subset\_1 \\ & (k1\_pdiff\_3 X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_euclid X1) \\ & k1\_numbers)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((m1\_subset\_1 X0 \\ & k5\_numbers)\wedge((m1\_subset\_1 X1 k5\_numbers)\wedge((v1\_funct\_1 X2)\wedge \\ & (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_euclid X0) k1\_numbers))))\wedge \\ & (m1\_subset\_1 X3 (k1\_euclid X0))))\Rightarrow((v1\_funct\_1 (k1\_pdiff\_2 \\ & X0 X1 X2 X3))\wedge(m1\_subset\_1 (k1\_pdiff\_2 X0 X1 X2 X3) (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))) \end{aligned} \quad (15)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0)\Rightarrow(m1\_finseq\_2 (k1\_euclid X0) k1\_numbers) \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1\_funct\_1 X0)\wedge(m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k1\_euclid np\_3) k1\_numbers))))\Rightarrow(\forall X1.(m2\_finseq\_2 X1 \\ & k1\_numbers (k1\_euclid np\_3))\Rightarrow((r3\_pdiff\_5 X0 X1)\Leftrightarrow(\exists X2. \\ & (m1\_subset\_1 X2 k1\_numbers)\wedge(\exists X3.(m1\_subset\_1 X3 k1\_numbers)\wedge \\ & (\exists X4.(m1\_subset\_1 X4 k1\_numbers)\wedge((X1 = k11\_finseq\_1 X2 \\ & X3 X4)\wedge(\exists X5.(m1\_rcomp\_1 X5 X4)\wedge((r1\_tarski X5 (k1\_relset\_1 \\ & k1\_numbers (k1\_pdiff\_2 np\_3 np\_3 (k1\_pdiff\_3 np\_1 np\_3 X0) \\ & X1))))\wedge(\exists X6.((v1\_funct\_1 X6)\wedge((v3\_fdiff\_1 X6)\wedge(m1\_subset\_1 \\ & X6 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers))))))\wedge(\exists X7. \\ & ((v1\_funct\_1 X7)\wedge((v2\_fdiff\_1 X7)\wedge(m1\_subset\_1 X7 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 k1\_numbers k1\_numbers))))))\wedge(\forall X8.(m1\_subset\_1 \\ & X8 k1\_numbers)\Rightarrow((X8 \in X5)\Rightarrow(k9\_real\_1 (k1\_seq\_1 (k1\_pdiff\_2 np\_3 \\ & np\_3 (k1\_pdiff\_3 np\_1 np\_3 X0) X1) X8) (k1\_seq\_1 (k1\_pdiff\_2 \\ & np\_3 np\_3 (k1\_pdiff\_3 np\_1 np\_3 X0) X1) X4) = k7\_real\_1 (k1\_seq\_1 \\ & X6 (k9\_real\_1 X8 X4) (k1\_seq\_1 X7 (k9\_real\_1 X8 X4)))))))))) \end{aligned} \quad (17)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1)\Rightarrow(v7\_ordinal1 X0) \quad (18)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k1\_numbers)\Rightarrow(v1\_xreal\_0 X0) \quad (19)$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((v1\_funct\_1 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& \quad (k1\_euclid\ np\_3) k1\_numbers)))) \Rightarrow (\forall X1.(m2\_finseq\_2 X1 \\
& \quad k1\_numbers (k1\_euclid\ np\_3)) \Rightarrow (\forall X2.(m1\_rcomp\_1 X2 (k1\_seq\_1 \\
& \quad (k1\_pdiff\_1\ np\_3\ np\_3) X1)) \Rightarrow (((r3\_pdiff\_5 X0 X1) \wedge (r1\_tarski \\
& \quad X2 (k1\_relset\_1 k1\_numbers (k1\_pdiff\_2\ np\_3\ np\_3 (k1\_pdiff\_3 \\
& \quad np\_1\ np\_3 X0) X1)))) \Rightarrow (\forall X3.((v2\_relat\_1 X3) \wedge ((v1\_funct\_1 \\
& X3) \wedge ((v1\_funct\_2 X3 k5\_numbers k1\_numbers) \wedge ((v1\_fdiff\_1 X3 k6\_numbers) \wedge \\
& (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers k1\_numbers)))))) \Rightarrow \\
& \quad (\forall X4.((v1\_funct\_1 X4) \wedge ((v3\_funct\_1 X4) \wedge ((v1\_funct\_2 \\
& X4 k5\_numbers k1\_numbers) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& k5\_numbers k1\_numbers)))))) \Rightarrow (((k2\_relset\_1 k1\_numbers X4 = k1\_tarski \\
& \quad (k1\_seq\_1 (k1\_pdiff\_1\ np\_3\ np\_3) X1)) \wedge (r1\_tarski (k2\_relset\_1 \\
& k1\_numbers (k3\_valued\_1 k5\_numbers k1\_numbers k1\_numbers X3 X4)) \\
& X2)) \Rightarrow ((v2\_comseq\_2 (k20\_valued\_1 k5\_numbers k1\_numbers k1\_numbers \\
& \quad (k37\_valued\_1 k5\_numbers k1\_numbers X3) (k47\_valued\_1 k5\_numbers \\
& k1\_numbers k1\_numbers (k8\_funct\_2 k5\_numbers k1\_numbers k1\_numbers \\
& \quad (k3\_valued\_1 k5\_numbers k1\_numbers k1\_numbers X3 X4) (k1\_pdiff\_2 \\
& \quad np\_3\ np\_3 (k1\_pdiff\_3\ np\_1\ np\_3 X0) X1)) (k8\_funct\_2 k5\_numbers \\
& \quad k1\_numbers k1\_numbers X4 (k1\_pdiff\_2\ np\_3\ np\_3 (k1\_pdiff\_3\ np\_1 \\
& \quad np\_3 X0) X1)))) \wedge (k3\_pdiff\_5 X0 X1 = k2\_seq\_2 (k20\_valued\_1 k5\_numbers \\
& \quad k1\_numbers k1\_numbers (k37\_valued\_1 k5\_numbers k1\_numbers X3) \\
& \quad (k47\_valued\_1 k5\_numbers k1\_numbers k1\_numbers (k8\_funct\_2 k5\_numbers \\
& k1\_numbers k1\_numbers (k3\_valued\_1 k5\_numbers k1\_numbers k1\_numbers \\
& \quad X3 X4) (k1\_pdiff\_2\ np\_3\ np\_3 (k1\_pdiff\_3\ np\_1\ np\_3 X0) X1)) ( \\
& \quad k8\_funct\_2 k5\_numbers k1\_numbers k1\_numbers X4 (k1\_pdiff\_2\ np\_3 \\
& \quad np\_3 (k1\_pdiff\_3\ np\_1\ np\_3 X0) X1)))))))))
\end{aligned}$$