

# t53\_pdiff.9 (TMLkEUjhJAPn- wzQhjxKk2eFSTg8o6qqxCXW)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k5\_numbers : \iota$  be given. 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  $np\_1 : \iota$  be given. Let  $r2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_pdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_pdiff\_9 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_pdiff\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $k5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $m2\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_pdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_pdiff\_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(m2\_subset\_1 X0 k1\_numbers k5\_numbers) \Rightarrow (\forall X1. \\ & \forall X2.((v1\_funct\_1 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k1\_euclid X0) k1\_numbers)))) \Rightarrow (r2\_relset\_1 (k1\_euclid X0) (k1\_euclid \\ & np\_1) (k3\_pdiff\_1 X0 (k2\_partfun1 (k1\_euclid X0) k1\_numbers X2 \\ & X1)) (k2\_partfun1 (k1\_euclid X0) (k1\_euclid np\_1) (k3\_pdiff\_1 \\ & X0 X2) X1))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.(m2\_subset\_1 X0 k1\_numbers k5\_numbers) \Rightarrow (\forall X1. \\ & ((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 ( \\ & k1\_euclid X0) k1\_numbers)))) \Rightarrow (k1\_relset\_1 (k1\_euclid X0) (k3\_pdiff\_1 \\ & X0 X1) = k1\_relset\_1 (k1\_euclid X0) X1)) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 np\_1) \wedge (m2\_subset\_1 np\_1 k1\_numbers k5\_numbers)) \wedge \\ & ((m1\_subset\_1 np\_1 k5\_numbers) \wedge (m1\_subset\_1 np\_1 k1\_numbers)) \end{aligned} \tag{3}$$

Assume the following.

$$\neg v1\_xboole\_0 np\_1 \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))\wedge(m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))))\Rightarrow((r2\_relset\_1 X0 X1 X2 X3)\Leftrightarrow(X2 = X3)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0))))\Rightarrow(\forall X2.(m2\_subset\_1 X2 X0 X1)\Leftrightarrow(m1\_subset\_1 X2 X1)) \quad (6)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((v1\_funct\_1 X2)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))))\Rightarrow(k2\_partfun1 X0 X1 X2 X3 = k5\_relat\_1 X2 X3) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X0)\wedge(v1\_funct\_1 X0))\Rightarrow((v1\_relat\_1 (k5\_relat\_1 X0 X1))\wedge(v1\_funct\_1 (k5\_relat\_1 X0 X1))) \quad (9)$$

Assume the following.

$$(\neg v1\_xboole\_0 k4\_ordinal1)\wedge(v3\_ordinal1 k4\_ordinal1) \quad (10)$$

Assume the following.

$$\neg v1\_xboole\_0 k1\_numbers \quad (11)$$

Assume the following.

$$m1\_subset\_1 k5\_numbers (k1\_zfmisc\_1 k1\_numbers) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.((v7\_ordinal1 X0)\wedge((v1\_funct\_1 X1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_euclid X0) k1\_numbers))))\Rightarrow((v1\_funct\_1 (k3\_pdf\_1 X0 X1))\wedge(m1\_subset\_1 (k3\_pdf\_1 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_euclid X0) (k1\_euclid np\_1)))))) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((v1\_funct\_1 X2)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))))\Rightarrow((v1\_funct\_1 (k2\_partfun1 X0 X1 X2 X3))\wedge(m1\_subset\_1 (k2\_partfun1 X0 X1 X2 X3) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))) \quad (14)$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 k5\_numbers))\Rightarrow \\
& (\forall X2.((\neg v1\_xboole\_0 X2)\wedge(m1\_subset\_1 X2 k5\_numbers))\Rightarrow \\
& (\forall X3.((v1\_funct\_1 X3)\wedge(m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (k1\_euclid X2) (k1\_euclid X1))))))\Rightarrow((r1\_pdiff\_6 X0 X1 X2 X3)\Leftrightarrow(( \\
& r1\_tarski X0 (k1\_relset\_1 (k1\_euclid X2) X3))\wedge(\forall X4.(m2\_finseq\_2 \\
& X4 k1\_numbers (k1\_euclid X2))\Rightarrow((X4 \in X0)\Rightarrow(r1\_pdiff\_1 X2 X1 (k2\_partfun1 \\
& (k1\_euclid X2) (k1\_euclid X1) X3 X0) X4))))))
\end{aligned} \tag{15}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((\neg v1\_xboole\_0 X1)\wedge(m2\_subset\_1 X1 k1\_numbers \\
& k5\_numbers))\Rightarrow(\forall X2.((v1\_funct\_1 X2)\wedge(m1\_subset\_1 X2 ( \\
& k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_euclid X1) k1\_numbers))))\Rightarrow((r2\_pdiff\_9 \\
& X0 X1 X2)\Leftrightarrow(\forall X3.(m2\_finseq\_2 X3 k1\_numbers (k1\_euclid X1))\Rightarrow \\
& ((X3 \in X0)\Rightarrow(r1\_pdiff\_7 X1 (k2\_partfun1 (k1\_euclid X1) k1\_numbers \\
& X2 X0) X3))))))
\end{aligned} \tag{16}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X0 k5\_numbers))\Rightarrow \\
& (\forall X1.((v1\_funct\_1 X1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (k1\_euclid X0) k1\_numbers))))\Rightarrow(\forall X2.(m2\_finseq\_2 X2 k1\_numbers \\
& (k1\_euclid X0))\Rightarrow((r1\_pdiff\_7 X0 X1 X2)\Leftrightarrow(r1\_pdiff\_1 X0 np\_1 (k3\_pdiff\_1 \\
& X0 X1) X2))))))
\end{aligned} \tag{17}$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1)\Rightarrow(v7\_ordinal1 X0) \tag{18}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))\Rightarrow(v1\_relat\_1 X2) \tag{19}$$

### Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0)\wedge(m2\_subset\_1 X0 k1\_numbers k5\_numbers))\Rightarrow \\
& (\forall X1.\forall X2.((v1\_funct\_1 X2)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (k1\_euclid X0) k1\_numbers))))\Rightarrow(\forall X3.((v1\_funct\_1 \\
& X3)\wedge(m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_euclid X0) \\
& (k1\_euclid np\_1))))))\Rightarrow((r2\_relset\_1 (k1\_euclid X0) (k1\_euclid \\
& np\_1) (k3\_pdiff\_1 X0 X2) X3)\Rightarrow(((r1\_tarski X1 (k1\_relset\_1 (k1\_euclid \\
& X0) X2))\wedge(r2\_pdiff\_9 X1 X0 X2))\Leftrightarrow(r1\_pdiff\_6 X1 np\_1 X0 X3))))))
\end{aligned}$$