

## t9\_pdiff\_3

(TMUU6TY5bQvUGt9p99eF8gd5AoFGKc6GLdD)

October 27, 2020

Let  $m2\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k1\_euclid : \iota \Rightarrow \iota$  be given. Let  $np\_2 : \iota$  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  $r1\_pdiff\_3 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r3\_pdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $k1\_pdiff\_3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_rcomp\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $v3\_fdiff\_1 : \iota \Rightarrow o$  be given. Let  $v2\_fdiff\_1 : \iota \Rightarrow o$  be given. Let  $k9\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_seq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  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  $k5\_numbers : \iota$  be given. Let  $v1\_xbool\_0 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((v1\_funct\_1 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
 & \quad (k1\_euclid np\_2) k1\_numbers)))) \Rightarrow (\forall X1. (m2\_finseq\_2 X1 \\
 & \quad k1\_numbers (k1\_euclid np\_2)) \Rightarrow ((r3\_pdiff\_1 np\_2 np\_1 X0 X1) \Leftrightarrow \\
 & \quad (\exists X2. (m1\_subset\_1 X2 k1\_numbers) \wedge (\exists X3. (m1\_subset\_1 \\
 & \quad X3 k1\_numbers) \wedge ((X1 = k10\_finseq\_1 X2 X3) \wedge (\exists X4. (m1\_rcomp\_1 \\
 & \quad X4 X2) \wedge ((r1\_tarski X4 (k1\_relset\_1 k1\_numbers (k1\_pdiff\_2 np\_2 \\
 & \quad np\_1 X0 X1)))) \wedge (\exists X5. ((v1\_funct\_1 X5) \wedge ((v3\_fdiff\_1 X5) \wedge \\
 & \quad (m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))))) \wedge \\
 & \quad (\exists X6. ((v1\_funct\_1 X6) \wedge ((v2\_fdiff\_1 X6) \wedge (m1\_subset\_1 \\
 & \quad X6 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))))) \wedge (\forall X7. \\
 & \quad (m1\_subset\_1 X7 k1\_numbers) \Rightarrow ((X7 \in X4) \Rightarrow (k9\_real\_1 (k1\_seq\_1 ( \\
 & \quad k1\_pdiff\_2 np\_2 np\_1 X0 X1) X7) (k1\_seq\_1 (k1\_pdiff\_2 np\_2 np\_1 \\
 & \quad X0 X1) X2) = k7\_real\_1 (k1\_seq\_1 X5 (k9\_real\_1 X7 X2)) (k1\_seq\_1 X6 \\
 & \quad (k9\_real\_1 X7 X2))))))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & ((v2\_xxreal\_0 np\_2) \wedge (m2\_subset\_1 np\_2 k1\_numbers k5\_numbers)) \wedge \\
 & ((m1\_subset\_1 np\_2 k5\_numbers) \wedge (m1\_subset\_1 np\_2 k1\_numbers))
 \end{aligned} \tag{2}$$

Assume the following.

$$\neg v1\_xboole\_0 \ np\_2 \tag{3}$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_1) \wedge (m2\_subset\_1 \ np\_1 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_1 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_1 \ k1\_numbers)) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((m1\_subset\_1 \ X0 \ k5\_numbers) \wedge \\ & (((\neg v1\_xboole\_0 \ X1) \wedge (m1\_subset\_1 \ X1 \ k5\_numbers)) \wedge ((v1\_funct\_1 \\ & \ X2) \wedge (m1\_subset\_1 \ X2 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ (k1\_euclid \ X1) \\ & k1\_numbers)))))) \Rightarrow ((v1\_funct\_1 \ (k1\_pdiff\_3 \ X0 \ X1 \ X2)) \wedge ((v1\_funct\_2 \\ & (k1\_pdiff\_3 \ X0 \ X1 \ X2) \ (k1\_euclid \ X1) \ k1\_numbers) \wedge (m1\_subset\_1 \\ & (k1\_pdiff\_3 \ X0 \ X1 \ X2) \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ (k1\_euclid \ X1) \\ & k1\_numbers)))))) \end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_funct\_1 \ X0) \wedge (m1\_subset\_1 \ X0 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \\ & (k1\_euclid \ np\_2) \ k1\_numbers)))) \Rightarrow (\forall X1. (m2\_finseq\_2 \ X1 \\ & k1\_numbers \ (k1\_euclid \ np\_2)) \Rightarrow ((r1\_pdiff\_3 \ X0 \ X1) \Leftrightarrow (\exists X2. \\ & (m1\_subset\_1 \ X2 \ k1\_numbers) \wedge (\exists X3. (m1\_subset\_1 \ X3 \ k1\_numbers) \wedge \\ & ((X1 = k10\_finseq\_1 \ X2 \ X3) \wedge (\exists X4. (m1\_rcomp\_1 \ X4 \ X2) \wedge ((r1\_tarSKI \\ & X4 \ (k1\_relset\_1 \ k1\_numbers \ (k1\_pdiff\_2 \ np\_2 \ np\_1 \ (k1\_pdiff\_3 \\ & np\_1 \ np\_2 \ X0) \ X1)))) \wedge (\exists X5. ((v1\_funct\_1 \ X5) \wedge ((v3\_fdiff\_1 \\ & X5) \wedge (m1\_subset\_1 \ X5 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ k1\_numbers \ k1\_numbers)))))) \wedge \\ & (\exists X6. ((v1\_funct\_1 \ X6) \wedge (v2\_fdiff\_1 \ X6) \wedge (m1\_subset\_1 \\ & X6 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ k1\_numbers \ k1\_numbers)))))) \wedge (\forall X7. \\ & (m1\_subset\_1 \ X7 \ k1\_numbers) \Rightarrow ((X7 \in X4) \Rightarrow (k9\_real\_1 \ (k1\_seq\_1 \ ( \\ & k1\_pdiff\_2 \ np\_2 \ np\_1 \ (k1\_pdiff\_3 \ np\_1 \ np\_2 \ X0) \ X1) \ X7) \ (k1\_seq\_1 \\ & (k1\_pdiff\_2 \ np\_2 \ np\_1 \ (k1\_pdiff\_3 \ np\_1 \ np\_2 \ X0) \ X1) \ X2) = k7\_real\_1 \\ & (k1\_seq\_1 \ X5 \ (k9\_real\_1 \ X7 \ X2)) \ (k1\_seq\_1 \ X6 \ (k9\_real\_1 \ X7 \ X2)))))))))) \end{aligned} \tag{6}$$

**Theorem 1**

$$\begin{aligned} & \forall X0. (m2\_finseq\_2 \ X0 \ k1\_numbers \ (k1\_euclid \ np\_2)) \Rightarrow (\forall X1. \\ & ((v1\_funct\_1 \ X1) \wedge (m1\_subset\_1 \ X1 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ ( \\ & k1\_euclid \ np\_2) \ k1\_numbers)))) \Rightarrow ((r1\_pdiff\_3 \ X1 \ X0) \Leftrightarrow (r3\_pdiff\_1 \\ & np\_2 \ np\_1 \ (k1\_pdiff\_3 \ np\_1 \ np\_2 \ X1) \ X0)) \end{aligned}$$