

## t19\_pdiff\_5

(TMWQquXnF82pQcatAydNVSnuN7h2M66kGhE)

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Let  $m2\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k1\_euclid : \iota \Rightarrow \iota$  be given. Let  $np\_3 : \iota$  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  $r1\_pdiff\_5 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r3\_pdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $k1\_pdiff\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k11\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $k1\_pdiff\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((v1\_funct\_1 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
 & \quad (k1\_euclid np\_3) k1\_numbers)))) \Rightarrow (\forall X1.(m2\_finseq\_2 X1 \\
 & \quad k1\_numbers (k1\_euclid np\_3)) \Rightarrow ((r3\_pdiff\_1 np\_3 np\_1 X0 X1) \Leftrightarrow \\
 & \quad (\exists X2.(m1\_subset\_1 X2 k1\_numbers) \wedge (\exists X3.(m1\_subset\_1 \\
 & \quad X3 k1\_numbers) \wedge (\exists X4.(m1\_subset\_1 X4 k1\_numbers) \wedge ((X1 = \\
 & \quad k11\_finseq\_1 X2 X3 X4) \wedge (\exists X5.(m1\_rcomp\_1 X5 X2) \wedge ((r1\_tarski \\
 & \quad X5 (k1\_relset\_1 k1\_numbers (k1\_pdiff\_2 np\_3 np\_1 X0 X1))) \wedge (\exists X6. \\
 & \quad ((v1\_funct\_1 X6) \wedge ((v3\_fdiff\_1 X6) \wedge (m1\_subset\_1 X6 (k1\_zfmisc\_1 \\
 & \quad (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))))) \wedge (\exists X7.((v1\_funct\_1 \\
 & \quad X7) \wedge ((v2\_fdiff\_1 X7) \wedge (m1\_subset\_1 X7 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
 & \quad k1\_numbers k1\_numbers)))))) \wedge (\forall X8.(m1\_subset\_1 X8 k1\_numbers) \Rightarrow \\
 & \quad ((X8 \in X5) \Rightarrow (k9\_real\_1 (k1\_seq\_1 (k1\_pdiff\_2 np\_3 np\_1 X0 X1) X8) \\
 & \quad (k1\_seq\_1 (k1\_pdiff\_2 np\_3 np\_1 X0 X1) X2) = k7\_real\_1 (k1\_seq\_1 \\
 & \quad X6 (k9\_real\_1 X8 X2)) (k1\_seq\_1 X7 (k9\_real\_1 X8 X2)))))))))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & ((v2\_xxreal\_0 np\_3) \wedge (m2\_subset\_1 np\_3 k1\_numbers k5\_numbers)) \wedge \\
 & ((m1\_subset\_1 np\_3 k5\_numbers) \wedge (m1\_subset\_1 np\_3 k1\_numbers))
 \end{aligned} \tag{2}$$

Assume the following.

$$\neg v1\_xboole\_0 \ np\_3 \tag{3}$$

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.

$$\begin{aligned} & \forall X0. ((v1\_funct\_1 \ X0) \wedge (m1\_subset\_1 \ X0 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \\ & \ (k1\_euclid \ np\_3) \ k1\_numbers)))) \Rightarrow (\forall X1. (m2\_finseq\_2 \ X1 \\ & \ k1\_numbers \ (k1\_euclid \ np\_3)) \Rightarrow ((r1\_pdiff\_5 \ X0 \ X1) \Leftrightarrow (\exists X2. \\ & \ (m1\_subset\_1 \ X2 \ k1\_numbers) \wedge (\exists X3. (m1\_subset\_1 \ X3 \ k1\_numbers) \wedge \\ & \ (\exists X4. (m1\_subset\_1 \ X4 \ k1\_numbers) \wedge ((X1 = k11\_finseq\_1 \ X2 \\ & \ X3 \ X4) \wedge (\exists X5. (m1\_rcomp\_1 \ X5 \ X2) \wedge ((r1\_tarski \ X5 \ (k1\_relset\_1 \\ & \ k1\_numbers \ (k1\_pdiff\_2 \ np\_3 \ np\_1 \ (k1\_pdiff\_3 \ np\_1 \ np\_3 \ X0) \\ & \ X1)))) \wedge (\exists X6. ((v1\_funct\_1 \ X6) \wedge ((v3\_fdiff\_1 \ X6) \wedge (m1\_subset\_1 \\ & \ X6 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ k1\_numbers \ k1\_numbers)))))) \wedge (\exists X7. \\ & \ ((v1\_funct\_1 \ X7) \wedge ((v2\_fdiff\_1 \ X7) \wedge (m1\_subset\_1 \ X7 \ (k1\_zfmisc\_1 \\ & \ (k2\_zfmisc\_1 \ k1\_numbers \ k1\_numbers)))))) \wedge (\forall X8. (m1\_subset\_1 \\ & \ X8 \ k1\_numbers) \Rightarrow ((X8 \in X5) \Rightarrow (k9\_real\_1 \ (k1\_seq\_1 \ (k1\_pdiff\_2 \ np\_3 \\ & \ np\_1 \ (k1\_pdiff\_3 \ np\_1 \ np\_3 \ X0) \ X1) \ X8) \ (k1\_seq\_1 \ (k1\_pdiff\_2 \\ & \ np\_3 \ np\_1 \ (k1\_pdiff\_3 \ np\_1 \ np\_3 \ X0) \ X1) \ X2) = k7\_real\_1 \ (k1\_seq\_1 \\ & \ X6 \ (k9\_real\_1 \ X8 \ X2)) \ (k1\_seq\_1 \ X7 \ (k9\_real\_1 \ X8 \ X2)))))))))) \end{aligned} \tag{6}$$

**Theorem 1**

$$\begin{aligned} & \forall X0. (m2\_finseq\_2 \ X0 \ k1\_numbers \ (k1\_euclid \ np\_3)) \Rightarrow (\forall X1. \\ & \ ((v1\_funct\_1 \ X1) \wedge (m1\_subset\_1 \ X1 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ ( \\ & \ k1\_euclid \ np\_3) \ k1\_numbers)))) \Rightarrow ((r1\_pdiff\_5 \ X1 \ X0) \Leftrightarrow (r3\_pdiff\_1 \\ & \ np\_3 \ np\_1 \ (k1\_pdiff\_3 \ np\_1 \ np\_3 \ X1) \ X0)) \end{aligned}$$