

# t39\_integr14 (TMSqEuN- BVbU29QruaHjiTmW1oP4AWyEVUDY)

October 27, 2020

Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v2\_measure5 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_numbers : \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_rcomp\_1 : \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_seq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k16\_sin\_cos : \iota$  be given. Let  $k19\_sin\_cos : \iota$  be given. Let  $k5\_square\_1 : \iota \Rightarrow \iota$  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  $k2\_fdiff\_9 : \iota$  be given. Let  $v1\_fcont\_1 : \iota \Rightarrow o$  be given. Let  $k2\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_integra5 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_seq\_4 : \iota \Rightarrow \iota$  be given. Let  $k5\_seq\_4 : \iota \Rightarrow \iota$  be given. Let  $r2\_fdiff\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_fdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_integra5 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_comseq\_2 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_fdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. \forall X2. ((X0 \in X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 X2))) \Rightarrow (m1\_subset\_1 X0 X2) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v3\_rcomp\_1 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 k1\_numbers))) \Rightarrow \\ & ((r1\_tarski X0 (k1\_relset\_1 k1\_numbers (k1\_partfun1 k1\_numbers \\ & k1\_numbers k1\_numbers k1\_numbers k19\_sin\_cos k2\_fdiff\_9))) \Rightarrow \\ & ((r2\_fdiff\_1 (k1\_partfun1 k1\_numbers k1\_numbers k1\_numbers k1\_numbers \\ & k19\_sin\_cos k2\_fdiff\_9) X0) \wedge (\forall X1. (m1\_subset\_1 X1 k1\_numbers) \Rightarrow \\ & ((X1 \in X0) \Rightarrow (k1\_seq\_1 (k2\_fdiff\_1 (k1\_partfun1 k1\_numbers k1\_numbers \\ & k1\_numbers k1\_numbers k19\_sin\_cos k2\_fdiff\_9) X0) X1 = k10\_real\_1 \\ & (k8\_real\_1 (k1\_seq\_1 k16\_sin\_cos X1) (k1\_seq\_1 k19\_sin\_cos (k1\_seq\_1 \\ & k19\_sin\_cos X1))) (k5\_square\_1 (k1\_seq\_1 k16\_sin\_cos (k1\_seq\_1 \\ & k19\_sin\_cos X1))))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0 X0) \wedge ((v2\_measure5 X0) \wedge (m1\_subset\_1 \\ & \quad X0 (k1\_zfmisc\_1 k1\_numbers)))) \Rightarrow (\forall X1. \forall X2. ((v1\_funct\_1 \\ & X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))) \Rightarrow \\ & \quad (((r1\_tarski X0 X1) \wedge (r2\_fdiff\_1 X2 X1) \wedge ((r1\_integra5 X0 (k2\_fdiff\_1 \\ & \quad X2 X1)) \wedge (v1\_comseq\_2 (k2\_partfun1 k1\_numbers k1\_numbers (k2\_fdiff\_1 \\ & \quad X2 X1) X0)))) \Rightarrow (k2\_integra5 X0 (k2\_fdiff\_1 X2 X1) = k9\_real\_1 (k1\_seq\_1 \\ & \quad X2 (k4\_seq\_4 X0) (k1\_seq\_1 X2 (k5\_seq\_4 X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0 X0) \wedge ((v2\_measure5 X0) \wedge (m1\_subset\_1 \\ & \quad X0 (k1\_zfmisc\_1 k1\_numbers)))) \Rightarrow (\forall X1. ((v1\_funct\_1 X1) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))) \Rightarrow \\ & \quad (((r1\_tarski X0 (k1\_relset\_1 k1\_numbers X1)) \wedge (v1\_fcont\_1 (k2\_partfun1 \\ & \quad k1\_numbers k1\_numbers X1 X0))) \Rightarrow (r1\_integra5 X0 X1))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0 X0) \wedge ((v2\_measure5 X0) \wedge (m1\_subset\_1 \\ & \quad X0 (k1\_zfmisc\_1 k1\_numbers)))) \Rightarrow (\forall X1. ((v1\_funct\_1 X1) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))) \Rightarrow \\ & \quad (((r1\_tarski X0 (k1\_relset\_1 k1\_numbers X1)) \wedge (v1\_fcont\_1 (k2\_partfun1 \\ & \quad k1\_numbers k1\_numbers X1 X0))) \Rightarrow (v1\_comseq\_2 (k2\_partfun1 k1\_numbers \\ & \quad k1\_numbers X1 X0)))) \end{aligned} \quad (5)$$

Assume the following.

$$(v1\_funct\_1 k2\_fdiff\_9) \wedge (m1\_subset\_1 k2\_fdiff\_9 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers))) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_funct\_1 X0) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 \\ & \quad (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))) \Rightarrow ((v1\_funct\_1 (k2\_fdiff\_1 \\ & X0 X1)) \wedge (m1\_subset\_1 (k2\_fdiff\_1 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & \quad k1\_numbers k1\_numbers)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\ & \quad (((v1\_funct\_1 X4) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & \quad X0 X1)))) \wedge ((v1\_funct\_1 X5) \wedge (m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X2 X3)))) \Rightarrow ((v1\_funct\_1 (k1\_partfun1 X0 X1 X2 X3 X4 X5)) \wedge (m1\_subset\_1 \\ & \quad (k1\_partfun1 X0 X1 X2 X3 X4 X5) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X3)))) \end{aligned} \quad (8)$$

Assume the following.

$$(v1\_funct\_1\ k19\_sin\_cos)\wedge((v1\_funct\_2\ k19\_sin\_cos\ k1\_numbers\ k1\_numbers)\wedge(m1\_subset\_1\ k19\_sin\_cos\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ k1\_numbers\ k1\_numbers)))) \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1\_funct\_1\ X0)\wedge(m1\_subset\_1\ X0\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ k1\_numbers\ k1\_numbers))))\Rightarrow(\forall X1.(r2\_fdiff\_1\ X0\ X1)\Rightarrow(\forall X2. \\ & ((v1\_funct\_1\ X2)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ k1\_numbers\ k1\_numbers))))\Rightarrow((X2 = k2\_fdiff\_1\ X0\ X1)\Leftrightarrow((k1\_relset\_1\ k1\_numbers\ X2 = X1)\wedge(\forall X3.(m1\_subset\_1\ X3\ k1\_numbers)\Rightarrow((X3 \in X1)\Rightarrow(k1\_seq\_1\ X2\ X3 = k1\_fdiff\_1\ X0\ X3)))))) \end{aligned} \quad (10)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0\ X0)\wedge((v2\_measure5\ X0)\wedge(m1\_subset\_1\ X0\ (k1\_zfmisc\_1\ k1\_numbers))))\Rightarrow(\forall X1.((v1\_funct\_1\ X1)\wedge \\ & (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ k1\_numbers\ k1\_numbers))))\Rightarrow \\ & (\forall X2.((v3\_rcomp\_1\ X2)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ k1\_numbers)))\Rightarrow \\ & (((r1\_tarski\ X0\ X2)\wedge(\forall X3.(m1\_subset\_1\ X3\ k1\_numbers)\Rightarrow \\ & ((X3 \in X2)\Rightarrow(k1\_seq\_1\ X1\ X3 = k10\_real\_1\ (k8\_real\_1\ (k1\_seq\_1\ k16\_sin\_cos\ X3)\ (k1\_seq\_1\ k19\_sin\_cos\ (k1\_seq\_1\ k19\_sin\_cos\ X3)))\ (k5\_square\_1\ (k1\_seq\_1\ k16\_sin\_cos\ (k1\_seq\_1\ k19\_sin\_cos\ X3))))))\wedge((r1\_tarski\ X2\ (k1\_relset\_1\ k1\_numbers\ (k1\_partfun1\ k1\_numbers\ k1\_numbers\ k1\_numbers\ k1\_numbers\ k19\_sin\_cos\ k2\_fdiff\_9)))\wedge((X2 = k1\_relset\_1\ k1\_numbers\ X1)\wedge(v1\_fcont\_1\ (k2\_partfun1\ k1\_numbers\ k1\_numbers\ X1\ X0))))))\Rightarrow(k2\_integra5\ X0\ X1 = k9\_real\_1\ (k1\_seq\_1\ (k1\_partfun1\ k1\_numbers\ k1\_numbers\ k1\_numbers\ k1\_numbers\ k19\_sin\_cos\ k2\_fdiff\_9)\ (k4\_seq\_4\ X0))\ (k1\_seq\_1\ (k1\_partfun1\ k1\_numbers\ k1\_numbers\ k1\_numbers\ k1\_numbers\ k19\_sin\_cos\ k2\_fdiff\_9)\ (k5\_seq\_4\ X0)))) \end{aligned}$$