

## t8\_rewrite2

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Let  $v5\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $v1\_rewrite2 : \iota \Rightarrow o$  be given. Let  $k1\_rewrite2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_rewrite2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_ordinal4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge ((v5\_ordinal1 X0) \wedge ((v1\_funct\_1 \\ & X0) \wedge (v1\_finset\_1 X0)))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v5\_ordinal1 \\ & X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finset\_1 X1)))) \Rightarrow (\forall X2.((v1\_relat\_1 \\ & X2) \wedge ((v5\_ordinal1 X2) \wedge ((v1\_funct\_1 X2) \wedge (v1\_finset\_1 X2)))) \Rightarrow \\ & (k1\_ordinal4 (k1\_ordinal4 X0 X1) X2 = k1\_ordinal4 X0 (k1\_ordinal4 \\ & X1 X2)))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((v5\_ordinal1 X0) \wedge ((v1\_relat\_1 X0) \wedge \\ & (v1\_funct\_1 X0) \wedge (v1\_finset\_1 X0)))) \wedge ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 \\ & X1) \wedge ((v1\_finseq\_1 X1) \wedge (v1\_rewrite2 X1)))) \Rightarrow ((v1\_relat\_1 (k2\_rewrite2 \\ & X0 X1)) \wedge ((v1\_funct\_1 (k2\_rewrite2 X0 X1)) \wedge ((v1\_finseq\_1 (k2\_rewrite2 \\ & X0 X1)) \wedge (v1\_rewrite2 (k2\_rewrite2 X0 X1)))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((v5\_ordinal1 X0) \wedge ((v1\_relat\_1 X0) \wedge \\ & (v1\_funct\_1 X0) \wedge (v1\_finset\_1 X0)))) \wedge ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 \\ & X1) \wedge ((v1\_finseq\_1 X1) \wedge (v1\_rewrite2 X1)))) \Rightarrow ((v1\_relat\_1 (k1\_rewrite2 \\ & X0 X1)) \wedge ((v1\_funct\_1 (k1\_rewrite2 X0 X1)) \wedge ((v1\_finseq\_1 (k1\_rewrite2 \\ & X0 X1)) \wedge (v1\_rewrite2 (k1\_rewrite2 X0 X1)))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_rewrite2 \\ & X0))) \Rightarrow (v5\_ordinal1 (k1\_funct\_1 X0 X1)) \end{aligned} \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X0)\wedge((v1\_funct\_1 X0)\wedge(v1\_rewrite2 X0)))\Rightarrow((v1\_relat\_1 (k1\_funct\_1 X0 X1))\wedge((v1\_funct\_1 (k1\_funct\_1 X0 X1))\wedge(v1\_finset\_1 (k1\_funct\_1 X0 X1)))) \quad (5)$$

Assume the following.

$$\forall X0.((v5\_ordinal1 X0)\wedge((v1\_relat\_1 X0)\wedge((v1\_funct\_1 X0)\wedge(v1\_finset\_1 X0))))\Rightarrow(\forall X1.((v1\_relat\_1 X1)\wedge((v1\_funct\_1 X1)\wedge(v1\_rewrite2 X1))))\Rightarrow(\forall X2.((v1\_relat\_1 X2)\wedge((v1\_funct\_1 X2)\wedge(v1\_rewrite2 X2))))\Rightarrow((X2 = k2\_rewrite2 X0 X1)\Leftrightarrow((k9\_xtuple\_0 X2 = k9\_xtuple\_0 X1)\wedge(\forall X3.(X3 \in k9\_xtuple\_0 X1)\Rightarrow(k1\_funct\_1 X2 X3 = k1\_ordinal4 (k1\_funct\_1 X1 X3) X0)))) \quad (6)$$

Assume the following.

$$\forall X0.((v5\_ordinal1 X0)\wedge((v1\_relat\_1 X0)\wedge((v1\_funct\_1 X0)\wedge(v1\_finset\_1 X0))))\Rightarrow(\forall X1.((v1\_relat\_1 X1)\wedge((v1\_funct\_1 X1)\wedge(v1\_rewrite2 X1))))\Rightarrow(\forall X2.((v1\_relat\_1 X2)\wedge((v1\_funct\_1 X2)\wedge(v1\_rewrite2 X2))))\Rightarrow((X2 = k1\_rewrite2 X0 X1)\Leftrightarrow((k9\_xtuple\_0 X2 = k9\_xtuple\_0 X1)\wedge(\forall X3.(X3 \in k9\_xtuple\_0 X1)\Rightarrow(k1\_funct\_1 X2 X3 = k1\_ordinal4 X0 (k1\_funct\_1 X1 X3)))))) \quad (7)$$

**Theorem 1**

$$\forall X0.((v5\_ordinal1 X0)\wedge((v1\_relat\_1 X0)\wedge((v1\_funct\_1 X0)\wedge(v1\_finset\_1 X0))))\Rightarrow(\forall X1.((v5\_ordinal1 X1)\wedge((v1\_relat\_1 X1)\wedge((v1\_funct\_1 X1)\wedge(v1\_finset\_1 X1))))\Rightarrow(\forall X2.((v1\_relat\_1 X2)\wedge((v1\_funct\_1 X2)\wedge((v1\_finseq\_1 X2)\wedge(v1\_rewrite2 X2))))\Rightarrow(k1\_rewrite2 X0 (k2\_rewrite2 X1 X2) = k2\_rewrite2 X1 (k1\_rewrite2 X0 X2))))$$