

## t31\_euclid\_2

(TMGeZ2yiU7tv52Hmndk4uindZFAfmy8vup8)

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Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k15\_euclid : \iota \Rightarrow \iota$  be given. Let  $k23\_rvsum\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_binop\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_binop\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k11\_binop\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_2 : \iota$  be given. Let  $k1\_euclid : \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v3\_valued\_0 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $k3\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k8\_rvsum\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_card\_1 : \iota \Rightarrow \iota$  be given. Let  $v4\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v3\_card\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (u1\_struct\_0 (k15\_euclid X0) = k1\_euclid X0) \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge ((v3\_valued\_0 \\ X0) \wedge (v1\_finseq\_1 X0)))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 \\ X1) \wedge ((v3\_valued\_0 X1) \wedge (v1\_finseq\_1 X1)))) \Rightarrow ((k3\_finseq\_1 X0 = \\ k3\_finseq\_1 X1) \Rightarrow (k23\_rvsum\_1 (k8\_rvsum\_1 X0 X1) (k8\_rvsum\_1 X0 \\ X1) = k9\_binop\_2 (k10\_binop\_2 (k23\_rvsum\_1 X0 X0) (k11\_binop\_2 \\ np\_2 (k23\_rvsum\_1 X0 X1))) (k23\_rvsum\_1 X1 X1)))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finseq\_1 X0))) \Rightarrow (k3\_finseq\_1 X0 = k1\_card\_1 X0) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((v7\_ordinal1 \\ & X0)\wedge((m1\_subset\_1 X1 (u1\_struct\_0 (k15\_euclid X0)))\wedge((m1\_subset\_1 \\ & X2 (u1\_struct\_0 (k15\_euclid X0)))\wedge(((v1\_relat\_1 X3)\wedge((v1\_funct\_1 \\ & X3)\wedge((v1\_finseq\_1 X3)\wedge(v3\_valued\_0 X3))))\wedge((v1\_relat\_1 X4)\wedge \\ & ((v1\_funct\_1 X4)\wedge((v1\_finseq\_1 X4)\wedge(v3\_valued\_0 X4))))))\Rightarrow \\ & (((X1 = X3)\wedge(X2 = X4))\Rightarrow(k5\_algstr\_0 (k15\_euclid X0) X1 X2 = k8\_rvsum\_1 \\ & X3 X4)) \end{aligned} \tag{4}$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0)\Rightarrow(v4\_funct\_1 (u1\_struct\_0 (k15\_euclid X0))) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.(v3\_card\_1 X1 X0)\Leftrightarrow(k1\_card\_1 X1 = X0) \tag{6}$$

Assume the following.

$$\forall X0.(v4\_funct\_1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 X0)\Rightarrow( \\ (v1\_relat\_1 X1)\wedge(v1\_funct\_1 X1))) \tag{7}$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ (k15\_euclid X0)))\Rightarrow(v3\_card\_1 X1 X0)) \tag{8}$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ (k15\_euclid X0)))\Rightarrow(v3\_valued\_0 X1)) \tag{9}$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ (k15\_euclid X0)))\Rightarrow(v1\_finseq\_1 X1)) \tag{10}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(v7\_ordinal1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & (k15\_euclid X0)))\Rightarrow(\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 ( \\ & k15\_euclid X0)))\Rightarrow(k23\_rvsum\_1 (k5\_algstr\_0 (k15\_euclid X0) X1 \\ & X2) (k5\_algstr\_0 (k15\_euclid X0) X1 X2) = k9\_binop\_2 (k10\_binop\_2 \\ & (k23\_rvsum\_1 X1 X1) (k11\_binop\_2 np\_2 (k23\_rvsum\_1 X1 X2))) (k23\_rvsum\_1 \\ & X2 X2)))) \end{aligned}$$