

# l45\_groeb\_1

(TMK4hGpaUKAofTK2mftw82VDLewEpbAxDwj)

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Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_valued\_0 : \iota \Rightarrow o$  be given. Let  $v2\_pre\_poly : \iota \Rightarrow o$  be given. Let  $r3\_pre\_poly : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_valued\_0 : \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_valued\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(v1\_xxreal\_0 X0) \Rightarrow (\forall X1.(v1\_xxreal\_0 X1) \Rightarrow (\forall X2. \\ & (v1\_xxreal\_0 X2) \Rightarrow (((r1\_xxreal\_0 X0 X1) \wedge (r1\_xxreal\_0 X1 X2)) \Rightarrow \\ & (r1\_xxreal\_0 X0 X2)))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v2\_valued\_0 X0))) \Rightarrow (v1\_xxreal\_0 (k1\_funct\_1 X0 X1)) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge ( \\ & (v1\_funct\_1 X1) \wedge ((v1\_partfun1 X1 X0) \wedge ((v4\_valued\_0 X1) \wedge (v2\_pre\_poly \\ & X1)))))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ( \\ & (v1\_funct\_1 X2) \wedge ((v1\_partfun1 X2 X0) \wedge ((v4\_valued\_0 X2) \wedge (v2\_pre\_poly \\ & X2)))))) \Rightarrow ((r3\_pre\_poly X0 X1 X2) \Leftrightarrow (\forall X3.r1\_xxreal\_0 (k1\_funct\_1 \\ & X1 X3) (k1\_funct\_1 X2 X3)))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v4\_valued\_0 X0)) \Rightarrow ((v1\_relat\_1 X0) \wedge (v3\_valued\_0 X0)) \quad (4)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v3\_valued\_0 X0)) \Rightarrow ((v1\_relat\_1 X0) \wedge (v2\_valued\_0 X0)) \quad (5)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(v3\_ordinal1\ X0) \Rightarrow (\forall X1.((v1\_relat\_1\ X1) \wedge (( \\ & v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge ((v1\_partfun1\ X1\ X0) \wedge ((v4\_valued\_0 \\ & X1) \wedge (v2\_pre\_poly\ X1)))))) \Rightarrow (\forall X2.((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1 \\ & X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge ((v1\_partfun1\ X2\ X0) \wedge ((v4\_valued\_0\ X2) \wedge \\ & (v2\_pre\_poly\ X2)))))) \Rightarrow (\forall X3.((v1\_relat\_1\ X3) \wedge ((v4\_relat\_1 \\ & X3\ X0) \wedge ((v1\_funct\_1\ X3) \wedge ((v1\_partfun1\ X3\ X0) \wedge ((v4\_valued\_0\ X3) \wedge \\ & (v2\_pre\_poly\ X3)))))) \Rightarrow (((r3\_pre\_poly\ X0\ X1\ X2) \wedge (r3\_pre\_poly \\ & X0\ X2\ X3)) \Rightarrow (r3\_pre\_poly\ X0\ X1\ X3)))) \end{aligned}$$