

## t3\_funct\_9

(TMSk5StyXdeRuDJKdAWpXgp8sKudRnpQWbn)

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Let  $v1\_xreal\_0 : \iota \Rightarrow o$  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  $v1\_funct\_9 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k45\_valued\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_valued\_0 : \iota \Rightarrow o$  be given. Let  $k3\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. (v1\_xreal\_0 X0) \Rightarrow (\forall X1. ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 \\ & X1) \wedge (v3\_valued\_0 X1))) \Rightarrow ((v1\_funct\_9 X1 X0) \Leftrightarrow ((X0 \neq k6\_numbers) \wedge \\ & (\forall X2. (v1\_xreal\_0 X2) \Rightarrow ((X2 \in k9\_xtuple\_0 X1) \Rightarrow ((k2\_xcmplx\_0 \\ & X2 X0 \in k9\_xtuple\_0 X1) \wedge ((k6\_xcmplx\_0 X2 X0 \in k9\_xtuple\_0 X1) \wedge (k1\_funct\_1 \\ & X1 X2 = k1\_funct\_1 X1 (k2\_xcmplx\_0 X2 X0)))))))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_valued\_0 X0))) \Rightarrow \\ & (\forall X1. ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_valued\_0 \\ & X1))) \Rightarrow (\forall X2. (X2 \in k9\_xtuple\_0 (k45\_valued\_1 X0 X1)) \Rightarrow (k1\_funct\_1 \\ & (k45\_valued\_1 X0 X1) X2 = k6\_xcmplx\_0 (k1\_funct\_1 X0 X2) (k1\_funct\_1 \\ & X1 X2)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_valued\_0 X0))) \Rightarrow \\ & (\forall X1. ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_valued\_0 \\ & X1))) \Rightarrow (k9\_xtuple\_0 (k45\_valued\_1 X0 X1) = k3\_xboole\_0 (k9\_xtuple\_0 \\ & X0) (k9\_xtuple\_0 X1))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v3\_valued\_0 \\ & X0))) \wedge ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v3\_valued\_0 X1)))) \Rightarrow \\ & ((v1\_relat\_1 (k45\_valued\_1 X0 X1)) \wedge ((v1\_funct\_1 (k45\_valued\_1 \\ & X0 X1)) \wedge (v3\_valued\_0 (k45\_valued\_1 X0 X1)))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(X2 = k3\_xboole\_0 X0 X1) \Leftrightarrow (\forall X3. (X3 \in X2) \Leftrightarrow ((X3 \in X0) \wedge (X3 \in X1))) \quad (5)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v3\_valued\_0 X0)) \Rightarrow ((v1\_relat\_1 X0) \wedge (v1\_valued\_0 X0)) \quad (6)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(v1\_xreal\_0 X0) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v3\_valued\_0 X1))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v1\_funct\_1 X2) \wedge (v3\_valued\_0 X2)))) \Rightarrow (((v1\_funct\_9 X1 X0) \wedge (v1\_funct\_9 X2 X0)) \Rightarrow (v1\_funct\_9 (k45\_valued\_1 X1 X2) X0)))) \end{aligned}$$