

# t27\_algspec1 (TMJcEm- pVHV6TTZMjoZ9JPjJdfUG3AyjAiqZ)

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $r1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_algspec1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k10\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_partfun1 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(( & \\ v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge & \\ (v1\_funct\_1 X2)) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge (v1\_funct\_1 X3)) \Rightarrow & \\ (((r1\_tarski (k10\_xtuple\_0 X2) (k9\_xtuple\_0 X0)) \wedge ((r1\_tarski & \\ (k10\_xtuple\_0 X3) (k9\_xtuple\_0 X1)) \wedge (r1\_partfun1 X0 X1))) \Rightarrow (k3\_relat\_1 & \\ (k1\_funct\_4 X2 X3) (k1\_funct\_4 X0 X1) = k1\_funct\_4 (k3\_relat\_1 X2 & \\ X0) (k3\_relat\_1 X3 X1)))))) & \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(( & \\ v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow ((r1\_partfun1 X0 X1) \Leftrightarrow (k2\_xboole\_0 & \\ X0 X1 = k1\_funct\_4 X0 X1))) & \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(m1\_algspec1 & \\ X1 X0) \Rightarrow (r1\_tarski (k10\_xtuple\_0 X1) (k9\_xtuple\_0 X0))) & \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. k1\_funct\_4 (k6\_partfun1 X0) (k6\_partfun1 & \\ X1) = k6\_partfun1 (k2\_xboole\_0 X0 X1) & \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(v1\_relat\_1 X1) \Rightarrow (k10\_xtuple\_0 & \\ (k2\_xboole\_0 X0 X1) = k2\_xboole\_0 (k10\_xtuple\_0 X0) (k10\_xtuple\_0 & \\ X1))) & \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\exists X1.m1\_algspec1 X1 X0) \quad (6)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(m1\_algspec1 X1 X0) \Rightarrow ((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.(((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \wedge ((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1))) \Rightarrow ((v1\_relat\_1 (k1\_funct\_4 X0 X1)) \wedge (v1\_funct\_1 (k1\_funct\_4 X0 X1))) \quad (8)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow ((m1\_algspec1 X1 X0) \Leftrightarrow ((k9\_xtuple\_0 X1 = k10\_xtuple\_0 X0) \wedge (k3\_relat\_1 X1 X0 = k6\_partfun1 (k10\_xtuple\_0 X0)))))) \quad (9)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge (v1\_funct\_1 X2)) \Rightarrow ((X2 = k1\_funct\_4 X0 X1) \Leftrightarrow ((k9\_xtuple\_0 X2 = k2\_xboole\_0 (k9\_xtuple\_0 X0) (k9\_xtuple\_0 X1)) \wedge (\forall X3.(X3 \in k2\_xboole\_0 (k9\_xtuple\_0 X0) (k9\_xtuple\_0 X1)) \Rightarrow (((X3 \in k9\_xtuple\_0 X1) \Rightarrow (k1\_funct\_1 X2 X3 = k1\_funct\_1 X1 X3)) \wedge ((\neg X3 \in k9\_xtuple\_0 X1) \Rightarrow (k1\_funct\_1 X2 X3 = k1\_funct\_1 X0 X3)))))))))) \quad (10)$$

**Theorem 1**

$$\forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow ((r1\_partfun1 X0 X1) \Rightarrow (\forall X2.(m1\_algspec1 X2 X0) \Rightarrow (\forall X3.(m1\_algspec1 X3 X1) \Rightarrow (m1\_algspec1 (k1\_funct\_4 X2 X3) (k1\_funct\_4 X0 X1)))))))$$