# t32_quantal1 (TMFDs8xNpeDNfSo7NAmbRNNKWwP5gWJyqXC)

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Let $v2\_struct\_0 : \iota \Rightarrow o$ be given. Let $v1\_group\_1 : \iota \Rightarrow o$ be given. Let $v3\_group\_1 : \iota \Rightarrow o$ be given. Let $v10\_lattices : \iota \Rightarrow o$ be given. Let $v4\_lattice3 : \iota \Rightarrow o$ be given. Let $v7\_quantal1 : \iota \Rightarrow o$ be given. Let $v8\_quantal1 : \iota \Rightarrow o$ be given. Let $v20\_quantal1 : \iota \Rightarrow o$ be given. Let $v21\_quantal1 : \iota \Rightarrow o$ be given. Let $l3\_quantal1 : \iota \Rightarrow o$ be given. Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $k6\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_quantal1 : \iota \Rightarrow \iota$ be given. Let $l3\_algstr\_0 : \iota \Rightarrow o$ be given. Let $k4\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2\_algstr\_0 : \iota \Rightarrow \iota$ be given. Let $l1\_quantal1 : \iota \Rightarrow o$ be given. Let $v17\_quantal1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1\_quantal1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_quantal1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1\_quantal1 : \iota \Rightarrow \iota$ be given. Let $l2\_quantal1 : \iota \Rightarrow o$ be given. Let $l4\_algstr\_0 : \iota \Rightarrow o$ be given. Let $l3\_lattices : \iota \Rightarrow o$ be given. Let $k3\_quantal1 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge (l3\_algstr\_0\ X0)) \Rightarrow ((v1\_group\_1\ X0) \Leftrightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow ((k6\_algstr\_0\ X0\ (k4\_binop\_1\ (u1\_struct\_0\ X0)\ (u2\_algstr\_0\ X0))\ X1 = X1) \wedge (k6\_algstr\_0\ X0\ X1\ (k4\_binop\_1\ (u1\_struct\_0\ X0)\ (u2\_algstr\_0\ X0)) = X1)))) \tag{1}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v3\_group\_1\ X0) \wedge ((v10\_lattices\ X0) \wedge ((v4\_lattice3\ X0) \wedge ((v7\_quantal1\ X0) \wedge ((v8\_quantal1\ X0) \wedge (l1\_quantal1\ X0)))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow ((v17\_quantal1\ X1\ X0) \Rightarrow ((v1\_group\_1\ X0) \wedge ((k4\_binop\_1\ (u1\_struct\_0\ X0)\ (u2\_algstr\_0\ X0) = k1\_quantal1\ X0\ X1\ X1) \wedge (k4\_binop\_1\ (u1\_struct\_0\ X0)\ (u2\_algstr\_0\ X0) = k2\_quantal1\ X0\ X1\ X1))))) \tag{2}$$

Assume the following.

$$\forall X0.(l3\_quantal1\ X0) \Rightarrow (m1\_subset\_1\ (u1\_quantal1\ X0)\ (u1\_struct\_0\ X0)) \tag{3}$$

Assume the following.

$$\forall X0.(l3\_quantal1\ X0) \Rightarrow (l2\_quantal1\ X0) \tag{4}$$

Assume the following.

$$\forall X0.(l2\_quantal1\ X0) \Rightarrow ((l1\_quantal1\ X0) \wedge (l4\_algstr\_0\ X0)) \tag{5}$$

Assume the following.

$$\forall X0.(l1\_quantal1\ X0) \Rightarrow ((l3\_lattices\ X0) \wedge (l3\_algstr\_0\ X0)) \tag{6}$$

Assume the following.

$$\begin{gathered}\forall X0.((\neg v2\_struct\_0\ X0) \wedge (l3\_quantal1\ X0)) \Rightarrow (k4\_quantal1 \\ X0 = k1\_quantal1\ X0\ (k3\_quantal1\ X0)\ (k3\_quantal1\ X0))\end{gathered} \tag{7}$$

Assume the following.

$$\forall X0.(l3\_quantal1\ X0) \Rightarrow (k3\_quantal1\ X0 = u1\_quantal1\ X0) \tag{8}$$

Assume the following.

$$\begin{gathered}\forall X0.((\neg v2\_struct\_0\ X0) \wedge (l3\_quantal1\ X0)) \Rightarrow ((v21\_quantal1 \\ X0) \Leftrightarrow (v17\_quantal1\ (u1\_quantal1\ X0)\ X0))\end{gathered} \tag{9}$$

**Theorem 1**

$$\begin{gathered}\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v1\_group\_1\ X0) \wedge ((v3\_group\_1 \\ X0) \wedge ((v10\_lattices\ X0) \wedge ((v4\_lattice3\ X0) \wedge ((v7\_quantal1\ X0) \wedge \\ ((v8\_quantal1\ X0) \wedge ((v20\_quantal1\ X0) \wedge ((v21\_quantal1\ X0) \wedge (l3\_quantal1 \\ X0)))))))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow \\ ((k6\_algstr\_0\ X0\ X1\ (k4\_quantal1\ X0) = X1) \wedge (k6\_algstr\_0\ X0\ (k4\_quantal1 \\ X0)\ X1 = X1)))\end{gathered}$$