

t26_functor3

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October 27, 2020

Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_altcat_1 : \iota \Rightarrow o$ be given. Let $v12_altcat_1 : \iota \Rightarrow o$ be given. Let $l2_altcat_1 : \iota \Rightarrow o$ be given. Let $v15_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_functor2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_functor2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r8_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k6_functor3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_functor3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_functor2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_functor2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_functor2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_functor3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_functor3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ 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 $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ be given. Let $v9_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
 & X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\
 & X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
 & X2 X0 X1) \Rightarrow (\forall X3.(m2_functor0 X3 X0 X1) \Rightarrow ((r1_functor2 X0 X1 \\
 & X2 X3) \Rightarrow (\forall X4.(m1_functor2 X4 X0 X1 X2 X3) \Rightarrow ((r8_pboole (u1_struct_0 \\
 & X0) (k3_functor2 X0 X1 X2 X3 X3 X4 (k1_functor2 X0 X1 X3)) X4) \wedge (r8_pboole \\
 & (u1_struct_0 X0) (k3_functor2 X0 X1 X2 X2 X3 (k1_functor2 X0 X1 X2) \\
 & X4) X4))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
 & X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\
 & X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.((\neg \\
 & v2_struct_0 X2) \wedge ((v2_altcat_1 X2) \wedge ((v12_altcat_1 X2) \wedge (l2_altcat_1 \\
 & X2)))) \Rightarrow (\forall X3.((v15_functor0 X3 X0 X1) \wedge (m2_functor0 X3 X0 \\
 & X1)) \Rightarrow (\forall X4.((v15_functor0 X4 X1 X2) \wedge (m2_functor0 X4 X1 X2)) \Rightarrow \\
 & (r8_pboole (u1_struct_0 X0) (k5_functor3 X0 X1 X2 X3 X3 (k4_functor2 \\
 & X0 X1 X3) X4) (k4_functor2 X0 X2 (k1_functor3 X0 X1 X2 X3 X4))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\
& X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.((\neg \\
& v2_struct_0 X2) \wedge ((v2_altcat_1 X2) \wedge ((v12_altcat_1 X2) \wedge (l2_altcat_1 \\
& X2)))) \Rightarrow (\forall X3.((v15_functor0 X3 X0 X1) \wedge (m2_functor0 X3 X0 \\
& X1)) \Rightarrow (\forall X4.((v15_functor0 X4 X0 X1) \wedge (m2_functor0 X4 X0 X1)) \Rightarrow \\
& (\forall X5.((v15_functor0 X5 X1 X2) \wedge (m2_functor0 X5 X1 X2)) \Rightarrow (\\
& \forall X6.((v15_functor0 X6 X1 X2) \wedge (m2_functor0 X6 X1 X2)) \Rightarrow ((\\
& (r1_functor2 X0 X1 X3 X4) \wedge (r1_functor2 X1 X2 X5 X6)) \Rightarrow (r1_functor2 \\
& X0 X2 (k1_functor3 X0 X1 X2 X3 X5) (k1_functor3 X0 X1 X2 X4 X6)))))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X0) \wedge (((v1_relat_1 \\
& X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge \\
& ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 \\
& X2 X0)))))) \Rightarrow ((r8_pboole X0 X1 X2) \Rightarrow (r8_pboole X0 X2 X1))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((\neg v2_struct_0 \\
& X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge \\
& (((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge \\
& l2_altcat_1 X1)))) \wedge ((m2_functor0 X2 X0 X1) \wedge (m2_functor0 X3 X0 \\
& X1))) \Rightarrow (r1_functor2 X0 X1 X2 X2)
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X0) \wedge (((v1_relat_1 \\
& X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge \\
& ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 \\
& X2 X0)))))) \Rightarrow ((r8_pboole X0 X1 X2) \Leftrightarrow (X1 = X2))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 \\
& X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge (((\neg v2_struct_0 \\
& X1) \wedge ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \wedge \\
& ((v15_functor0 X2 X0 X1) \wedge (m2_functor0 X2 X0 X1))) \Rightarrow (k4_functor2 \\
& X0 X1 X2 = k1_functor2 X0 X1 X2)
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\neg v1_xboole_0 \\
& (u1_struct_0 X0))
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\
& X0)\wedge((v2_altcat_1 X0)\wedge((v12_altcat_1 X0)\wedge(l2_altcat_1 X0))))\wedge \\
& (((\neg v2_struct_0 X1)\wedge((v2_altcat_1 X1)\wedge((v12_altcat_1 X1)\wedge \\
& l2_altcat_1 X1))))\wedge((m2_functor0 X2 X0 X1)\wedge(m2_functor0 X3 X0 \\
& X1)))\Rightarrow(\forall X4.(m1_functor2 X4 X0 X1 X2 X3)\Rightarrow((v1_relat_1 X4)\wedge \\
& ((v4_relat_1 X4 (u1_struct_0 X0))\wedge((v1_funct_1 X4)\wedge(v1_partfun1 \\
& X4 (u1_struct_0 X0))))))
\end{aligned} \tag{9}$$

Assume the following.

$$\forall X0.(l2_altcat_1 X0)\Rightarrow(l1_altcat_1 X0) \tag{10}$$

Assume the following.

$$\forall X0.(l1_altcat_1 X0)\Rightarrow(l1_struct_0 X0) \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& \forall X6.\forall X7.\forall X8.(((\neg v2_struct_0 X0)\wedge((v2_altcat_1 \\
& X0)\wedge((v12_altcat_1 X0)\wedge(l2_altcat_1 X0))))\wedge(((\neg v2_struct_0 \\
& X1)\wedge((v2_altcat_1 X1)\wedge((v12_altcat_1 X1)\wedge(l2_altcat_1 X1))))\wedge \\
& (((\neg v2_struct_0 X2)\wedge((v2_altcat_1 X2)\wedge((v12_altcat_1 X2)\wedge \\
& l2_altcat_1 X2))))\wedge(((v15_functor0 X3 X0 X1)\wedge(m2_functor0 X3 \\
& X0 X1))\wedge(((v15_functor0 X4 X0 X1)\wedge(m2_functor0 X4 X0 X1))\wedge(((v15_functor0 \\
& X5 X1 X2)\wedge(m2_functor0 X5 X1 X2))\wedge(((v15_functor0 X6 X1 X2)\wedge(m2_functor0 \\
& X6 X1 X2))\wedge((m1_functor2 X7 X0 X1 X3 X4)\wedge(m1_functor2 X8 X1 X2 X5 X6))))))\Rightarrow \\
& (m1_functor2 (k7_functor3 X0 X1 X2 X3 X4 X5 X6 X7 X8) X0 X2 (k1_functor3 \\
& X0 X1 X2 X3 X5) (k1_functor3 X0 X1 X2 X4 X6))
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& \forall X6.(((\neg v2_struct_0 X0)\wedge((v2_altcat_1 X0)\wedge((v12_altcat_1 \\
& X0)\wedge(l2_altcat_1 X0))))\wedge(((\neg v2_struct_0 X1)\wedge((v2_altcat_1 \\
& X1)\wedge((v12_altcat_1 X1)\wedge(l2_altcat_1 X1))))\wedge(((\neg v2_struct_0 \\
& X2)\wedge((v2_altcat_1 X2)\wedge((v12_altcat_1 X2)\wedge(l2_altcat_1 X2))))\wedge \\
& (((v15_functor0 X3 X1 X2)\wedge(m2_functor0 X3 X1 X2))\wedge(((v15_functor0 \\
& X4 X1 X2)\wedge(m2_functor0 X4 X1 X2))\wedge(((v15_functor0 X5 X0 X1)\wedge(m2_functor0 \\
& X5 X0 X1))\wedge(m1_functor2 X6 X1 X2 X3 X4))))))\Rightarrow(m1_functor2 (k6_functor3 \\
& X0 X1 X2 X3 X4 X5 X6) X0 X2 (k1_functor3 X0 X1 X2 X5 X3) (k1_functor3 X0 \\
& X1 X2 X5 X4))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& \forall X6. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \wedge (((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\
& X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \wedge (((\neg v2_struct_0 \\
& X2) \wedge ((v2_altcat_1 X2) \wedge ((v12_altcat_1 X2) \wedge (l2_altcat_1 X2)))) \wedge \\
& (((v15_functor0 X3 X0 X1) \wedge (m2_functor0 X3 X0 X1)) \wedge ((v15_functor0 \\
& X4 X0 X1) \wedge (m2_functor0 X4 X0 X1)) \wedge ((m1_functor2 X5 X0 X1 X3 X4) \wedge (\\
& (v15_functor0 X6 X1 X2) \wedge (m2_functor0 X6 X1 X2)))))) \Rightarrow (m1_functor2 \\
& (k5_functor3 X0 X1 X2 X3 X4 X5 X6) X0 X2 (k1_functor3 X0 X1 X2 X3 X6) (\\
& k1_functor3 X0 X1 X2 X4 X6))
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2_struct_0 \\
& X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge \\
& (((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge (\\
& l2_altcat_1 X1)))) \wedge (((\neg v2_struct_0 X2) \wedge ((v12_altcat_1 X2) \wedge \\
& (l2_altcat_1 X2)))) \wedge ((v15_functor0 X3 X0 X1) \wedge (m2_functor0 X3 \\
& X0 X1)) \wedge ((v15_functor0 X4 X1 X2) \wedge (m2_functor0 X4 X1 X2)))) \Rightarrow (\\
& (v9_functor0 (k1_functor3 X0 X1 X2 X3 X4) X0 X2) \wedge ((v15_functor0 \\
& (k1_functor3 X0 X1 X2 X3 X4) X0 X2) \wedge (m2_functor0 (k1_functor3 X0 \\
& X1 X2 X3 X4) X0 X2)))
\end{aligned} \tag{15}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 \\
& X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge (((\neg v2_struct_0 \\
& X1) \wedge ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \wedge \\
& (m2_functor0 X2 X0 X1)) \Rightarrow (m1_functor2 (k1_functor2 X0 X1 X2) X0 \\
& X1 X2 X2)
\end{aligned} \tag{16}$$

Assume the following.

$$\begin{aligned}
& \forall X0. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1. (((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\
& X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2. ((\neg \\
& v2_struct_0 X2) \wedge ((v2_altcat_1 X2) \wedge ((v12_altcat_1 X2) \wedge (l2_altcat_1 \\
& X2)))) \Rightarrow (\forall X3. ((v15_functor0 X3 X0 X1) \wedge (m2_functor0 X3 X0 \\
& X1)) \Rightarrow (\forall X4. ((v15_functor0 X4 X0 X1) \wedge (m2_functor0 X4 X0 X1)) \Rightarrow \\
& (\forall X5. ((v15_functor0 X5 X1 X2) \wedge (m2_functor0 X5 X1 X2)) \Rightarrow (\\
& \forall X6. ((v15_functor0 X6 X1 X2) \wedge (m2_functor0 X6 X1 X2)) \Rightarrow (\forall X7. \\
& (m1_functor2 X7 X0 X1 X3 X4) \Rightarrow (\forall X8. (m1_functor2 X8 X1 X2 X5 \\
& X6) \Rightarrow (k7_functor3 X0 X1 X2 X3 X4 X5 X6 X7 X8 = k3_functor2 X0 X2 (k1_functor3 \\
& X0 X1 X2 X3 X5) (k1_functor3 X0 X1 X2 X4 X5) (k1_functor3 X0 X1 X2 X4 X6) \\
& (k5_functor3 X0 X1 X2 X3 X4 X7 X5) (k6_functor3 X0 X1 X2 X5 X6 X4 X8)))))))))
\end{aligned} \tag{17}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\ & X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\ & X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.((\neg \\ & v2_struct_0 X2) \wedge ((v2_altcat_1 X2) \wedge ((v12_altcat_1 X2) \wedge (l2_altcat_1 \\ & X2)))) \Rightarrow (\forall X3.((v15_functor0 X3 X0 X1) \wedge (m2_functor0 X3 X0 \\ & X1)) \Rightarrow (\forall X4.((v15_functor0 X4 X1 X2) \wedge (m2_functor0 X4 X1 X2)) \Rightarrow \\ & (\forall X5.((v15_functor0 X5 X1 X2) \wedge (m2_functor0 X5 X1 X2)) \Rightarrow (\\ & \forall X6.(m1_functor2 X6 X1 X2 X4 X5) \Rightarrow ((r1_functor2 X1 X2 X4 X5) \Rightarrow \\ & (r8_pboole (u1_struct_0 X0) (k6_functor3 X0 X1 X2 X4 X5 X3 X6) (k7_functor3 \\ & X0 X1 X2 X3 X3 X4 X5 (k4_functor2 X0 X1 X3) X6)))))))))) \end{aligned}$$