1 Active Clauses

(C9) $\vdash m_0+(((k*(l_0+(\mathbf{1}+\mathbf{1})))+(l_0*(m_0+\mathbf{1})))+\mathbf{1}) = k+((k+(m_0+\mathbf{1}))*(l_0+\mathbf{1}))$

(C25) $\mathbf{0} < \mathbf{p_0} \vdash \mathbf{p_0} = s_7(\mathbf{p_0}) + \mathbf{1}$

(C26) $\mathbf{0} < \mathbf{p_0} \vdash t_0 = s_5(\mathbf{p_0}, t_0) + (s_6(\mathbf{p_0}, t_0) * \mathbf{p_0})$

(C27) $\mathbf{0} < \mathbf{p_0}, s_5(\mathbf{p_0}, t_0) = \mathbf{0} \vdash t_0 = \mathbf{0} + (s_6(\mathbf{p_0}, t_0) * \mathbf{p_0})$

(C28) $\mathbf{0} < \mathbf{p_0} \vdash s_5(\mathbf{p_0}, t_0) < \mathbf{p_0}$

(C41) $t_0 = \mathbf{p_0}, nat_{17} * nat_{18} = t_0 \vdash nat_{17} = \mathbf{1}, nat_{17} = t_0$

(C42) $t_0 = \mathbf{p_0} \vdash \mathbf{1} < t_0$

(C46) $\vdash m_0 = \mathbf{1}, s_1(m_0) * s_4(m_0) = m_0$

(C49) $\vdash m_0 = \mathbf{1}, s_1(m_0) = \mathbf{p_0}$

(C52) $t_0 = \mathbf{p_0}, \mathbf{1} = n_0 * t_0 \vdash$

2 Subsumed

(C1) $\mathbf{1} + (l_0 + \mathbf{1}) = \mathbf{1} \vdash$ by (A13)

(C20) $\mathbf{0} < \mathbf{p_0} \vdash (q_0 * \mathbf{p_0}) + (r_0 * \mathbf{p_0}) = (q_0 + r_0) * \mathbf{p_0}$ by (A23)

(C21) $\mathbf{0} < \mathbf{p_0} \vdash (i_0 + (q_0 * \mathbf{p_0})) + (r_0 * \mathbf{p_0}) = i_0 + ((q_0 * \mathbf{p_0}) + (r_0 * \mathbf{p_0}))$ by (A1)

(C29) $\mathbf{0} < i_0, \mathbf{0} < \mathbf{p_0}, i_0 < \mathbf{p_0}, i_0 + (q_0 * \mathbf{p_0}) = \mathbf{0} + (r_0 * \mathbf{p_0}) \vdash$ by (A29)

(C30) $i_0 < \mathbf{0}, \mathbf{0} < \mathbf{p_0}, i_0 < \mathbf{p_0}, i_0 + (q_0 * \mathbf{p_0}) = \mathbf{0} + (r_0 * \mathbf{p_0}) \vdash$ by (A28)

(C31) $\vdash i_0 = \mathbf{0}, i_0 < \mathbf{0}, \mathbf{0} < i_0$ by (A30)

(C33) $\mathbf{0} + \mathbf{1} < \mathbf{p_0} \vdash \mathbf{0} < \mathbf{p_0}$ by (A34)

(C34) $\vdash \mathbf{0} + \mathbf{1} = \mathbf{1}$ by (A6)

(C47) $\vdash m_0 = \mathbf{1}, s_4(m_0) * s_1(m_0) = s_1(m_0) * s_4(m_0)$ by (A14)

(C48) $\vdash m_0 = \mathbf{1}, \mathbf{0} + (s_4(m_0) * s_1(m_0)) = s_4(m_0) * s_1(m_0)$ by (A6)

(C54) $t_0 = \mathbf{p_0} \vdash \mathbf{0} + (n_0 * t_0) = n_0 * t_0$ by (A6)

3 Clauses with Tautologies

(C2) $nat_2 + (nat_3 + \mathbf{1}) = \mathbf{1} \vdash nat_2 + (nat_3 + \mathbf{1}) = \mathbf{1}$

(C3) $nat_4 = \mathbf{1} \vdash nat_4 = \mathbf{1}$

(C4) $nat_7 = \mathbf{1} \vdash nat_7 = \mathbf{1}$

(C5) $nat_7 = nat_5 + (nat_8 * (nat_6 + \mathbf{1})) \vdash nat_7 = nat_5 + (nat_8 * (nat_6 + \mathbf{1}))$

(C6) $nat_5 = \mathbf{1} \vdash nat_5 = \mathbf{1}$

(C7) $m_0 + (n_0 + \mathbf{1}) \in x \vdash m_0 + (n_0 + \mathbf{1}) \in x$

(C8) $m_0 + (n_0 + \mathbf{1}) = k + (nat_1 * (l_0 + \mathbf{1})) \vdash m_0 + (n_0 + \mathbf{1}) = k + (nat_1 * (l_0 + \mathbf{1}))$

(C10) $k \in x \vdash k \in x$

(C11) $nat_{11} = \mathbf{1} \vdash nat_{11} = \mathbf{1}$

(C12) $nat_{11} = nat_9 + (nat_{12} * (nat_{10} + \mathbf{1})) \vdash nat_{11} = nat_9 + (nat_{12} * (nat_{10} + \mathbf{1}))$

(C13) $nat_9 = \mathbf{1} \vdash nat_9 = \mathbf{1}$

(C14) $n_0 = \mathbf{1} \vdash n_0 = \mathbf{1}$

(C15) $n_0 = \mathbf{1} \vdash n_0 = \mathbf{1}$

(C16) $nat_{26} = \mathbf{0} + (nat_{28} * \mathbf{p_0}) \vdash nat_{26} = \mathbf{0} + (nat_{28} * \mathbf{p_0})$

(C17) $nat_{26} = nat_{23} + (nat_{27} * (nat_{25} + \mathbf{1})) \vdash nat_{26} = nat_{23} + (nat_{27} * (nat_{25} + \mathbf{1}))$

(C18) $nat_{23} = \mathbf{0} + (nat_{24} * \mathbf{p_0}) \vdash nat_{23} = \mathbf{0} + (nat_{24} * \mathbf{p_0})$

(C19) $\mathbf{0} < \mathbf{p_0}, t_0 = i_0 + ((q_0 + r_0) * \mathbf{p_0}) \vdash t_0 = i_0 + ((q_0 + r_0) * \mathbf{p_0})$

(C22) $\mathbf{0} < \mathbf{p_0}, m_0 = i_0 + (q_0 * \mathbf{p_0}) \vdash m_0 = i_0 + (q_0 * \mathbf{p_0})$

(C23) $\mathbf{0} < \mathbf{p_0}, i_0 = \mathbf{0} \vdash i_0 = \mathbf{0}$

(C24) $\mathbf{0} < \mathbf{p_0}, i_0 < \mathbf{p_0} \vdash i_0 < \mathbf{p_0}$

(C32) $t_0 = i_0 + (q_0 * \mathbf{p_0}) \vdash t_0 = i_0 + (q_0 * \mathbf{p_0})$

(C35) $\mathbf{1} < \mathbf{p_0} \vdash \mathbf{1} < \mathbf{p_0}$

(C36) $nat_{19} = \mathbf{p_0} \vdash nat_{19} = \mathbf{p_0}$

(C37) $nat_{19} = \mathbf{1} \vdash nat_{19} = \mathbf{1}$

(C38) $nat_{19} * nat_{20} = \mathbf{p_0} \vdash nat_{19} * nat_{20} = \mathbf{p_0}$

(C39) $\mathbf{1} < \mathbf{p_0} \vdash \mathbf{1} < \mathbf{p_0}$

(C43) $m_0 = \mathbf{0} + (nat_{13} * t_0) \vdash m_0 = \mathbf{0} + (nat_{13} * t_0)$

(C44) $t_0 = \mathbf{p_0} \vdash t_0 = \mathbf{p_0}$

(C50) $m_0 = \mathbf{1} \vdash m_0 = \mathbf{1}$

(C51) $m_0 = \mathbf{1} \vdash m_0 = \mathbf{1}$

(C53) $t_0 = \mathbf{p_0}, m_0 = \mathbf{1} \vdash m_0 = \mathbf{1}$

(C55) $m_0 = \mathbf{0} + (nat_{16} * \mathbf{p_0}) \vdash m_0 = \mathbf{0} + (nat_{16} * \mathbf{p_0})$

4 Clauses with Reflexivity

(C40) $\vdash \mathbf{p_0} = \mathbf{p_0}$

(C45) $\vdash m_0 = \mathbf{1}, m_0 = m_0$

(C56) $\vdash \mathbf{p_0} = \mathbf{p_0}$

(C57) $\vdash \mathbf{1} = \mathbf{1}$

5 Explicit Axioms

(A1) $\vdash (k + l) + m = k + (l + m)$ (subsumes 1 clause)

(A2) $\vdash k + l = l + k$

(A3) $\vdash k + (l + m) = (k + l) + m$

(A4) $k + l = k + m \vdash l = m$

(A5) $\vdash k + \mathbf{0} = k$

(A6) $\vdash \mathbf{0} + k = k$ (subsumes 3 clauses)

(A7) $k + l = m + l \vdash k = m$

(A8) $k = l + k \vdash l = \mathbf{0}$

(A9) $k = k + l \vdash l = \mathbf{0}$

(A10) $k + l = k \vdash l = \mathbf{0}$

(A11) $k + l = l \vdash k = \mathbf{0}$

(A12) $k = l \vdash m + k = m + l$

(A13) $\mathbf{1} + (k + \mathbf{1}) = \mathbf{1} \vdash$ (subsumes 1 clause)

(A14) $\vdash k * l = l * k$ (subsumes 1 clause)

(A15) $k + \mathbf{1} = \mathbf{0} \vdash$

(A16) $\vdash k * (l * m) = (k * l) * m$

(A17) $\vdash (k * l) * m = k * (l * m)$

(A18) $\vdash k * \mathbf{1} = k$

(A19) $\vdash \mathbf{1} * k = k$

(A20) $\vdash k * (l + m) = (k * l) + (k * m)$

(A21) $\vdash (k + l) * m = (k * m) + (l * m)$

(A22) $\vdash (k * l) + (k * m) = k * (m + l)$

(A23) $\vdash (k * l) + (m * l) = (k + m) * l$ (subsumes 1 clause)

(A24) $\vdash (k * l) + k = k * (l + \mathbf{1})$

(A25) $\vdash (k + l) * m = (l * m) + (k * m)$

(A26) $\mathbf{1} = l * k \vdash k = \mathbf{1}$

(A27) $\mathbf{1} = k * l \vdash k = \mathbf{1}$

(A28) $k < l, k < m, l < m, k + (i * m) = l + (j * m) \vdash$ (subsumes 1 clause)

(A29) $k < l, k < m, l < m, l + (i * m) = k + (j * m) \vdash$ (subsumes 1 clause)

(A30) $\vdash k = l, k < l, l < k$ (subsumes 1 clause)

(A31) $\vdash \mathbf{0} < k + \mathbf{1}$

(A32) $\mathbf{1} < k, \mathbf{1} = l * k \vdash$

(A33) $\mathbf{1} < k, k = \mathbf{1} \vdash$

(A34) $n + \mathbf{1} < m \vdash n < m$ (subsumes 1 clause)