

付 録 LISP による命題論理の定理証明プログラム

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DEFINE(
  (THEOREM(LANEDA(S) (PROG(L2)
    (SETQ L2 NIL)
    A ((EQUAL(CAR S) (QUOTE J))
      (RETURN(DEC NIL L2 NIL (CER S))))
      (SETQ L2 (CONS (CAR S) L2))
      (SETQ S (CER S))
      (GO A)
    ))
  (DEC (LANEDA (L1 L2 R1 R2)
    (PROG()
    A ((NULL L2)(GO E))
      ((ATOM(CAR L2))(GO D))
      ((EQ(CAR L2) (QUOTE -))(GO E))
      ((EQ(CADAR L2) (QUOTE *))(GO F))
      ((EQ(CADAR L2) (QUOTE \))
        (RETURN(COND
          ((DEC L1 (CONS(CAAR L2) (CER L2))) R1 R2)
          (DEC L1 (CONS(CADAR L2)
            (CDR L2))) R1 R2))
          (T NIL))))
      ((EQ(CADAR L2) (QUOTE >))
        (RETURN(COND
          ((DEC L1 (CONS(CAEDAR L2) (CER L2))) R1 R2)
          (DEC L1 (CDR L2) R1 (CONS(CAAR L2) R2)))
          (T NIL))))
      ((EQ(CAEDAR L2) (QUOTE =))
        (RETURN(COND
          ((DEC L1 (CONS(CAAR L2) (CONS(CAEDAR L2)
            (CDR L2))) R1 R2)
          (DEC L1 (CDR L2) R1 (CONS(CAAR L2) (CONS(CAEDAR
            L2) R2))) (T NIL))))
          (GO C)
    ))
  B ((NULL R2)(RETURN(INTERSP L1 R1)))
    ((ATOM(CAR R2))(GO G))
    ((EQ(CAAR R2) (QUOTE -))(GO H))
    ((EQ(CAAR R2) (QUOTE *))
      (RETURN(COND((EQ L1 L2 R1 (CONS(CAAR R2) (CER R2)))
        (DEC L1 L2 R1 (CONS(CAEDAR R2) (CER R2))))
        (T NIL))))
    ((EQ(CADAR R2) (QUOTE \)) (GO L))
    ((EQ(CADAR R2) (QUOTE >)) (GO I))
    ((EQ(CADAR R2) (QUOTE =))
      (RETURN(COND((EQ L1 (CONS
        (CAEDAR R2) L2) R1 (CONS
        (CAAR R2) (CER R2)))
        (DEC L1 (CONS(CAAR R2) L2) R1 (CONS(CAEDAR R2)
        (CER R2)))
        (T NIL))))
    ))
  C (RETURN(PRINT(LIST(QUOTE ERROR) L1 L2 R1 R2)))
  D (SETQ L1 (CONS(CAR L2) L1))
  E (SETQ R2 (CONS(CAAR L2) R2))
  F (SETQ L2 (CONS(CAEDAR L2) (CONS
    (CAAR L2) (CER L2))))
  G (GO A)
  H (SETQ R2 (CONS(CAAR R2) L2))
  I (SETQ L2 (CONS(CAAR R2) L2))
  J (SETQ R2 (CONS(CADAR R2) (CER R2)))
  K (SETQ R2 (CDR R2))
  L (SETQ R2 (CONS(CADAR R2) (CONS
    (CAAR R2) (CER R2))))
  ))
  (INTERSP(LANEDA(L1 R1)
    (PROG()
    A ((NULL L1)(RETURN NIL))
      ((MEMBER(CAR L1) R1)(RETURN T))
      (SETQ L1 (CDR L1))
      (GO A)
    ))
  ))
  (MEMBER(LANEDA(A E)
    (PROG()
    A ((NULL E)(RETURN NIL))
      ((EQUAL A (CAR E))(RETURN T))
      (SETQ E (CER E))
      (GO A)
    ))
  ))
  (THEOREM DEC INTERSP MEMBER)
  STOP 1386 NIL

  THEOREM(( J ((A \ E) > (-(A) * (- E))) ))
  T
  THEOREM(( J ((- A) \ (- E)) > (-(A * E))) ))
  T
  THER
  ( )
  STOP 741 THER

  THEOREM(( J ((- (A * E)) = ((- A) \ (- E)) )) )
  T
  THEOREM(( ((- A) * (- (A \ E))) \ (- (A * E))) J ))
  NIL

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ペ ー ジ	段	行	種 別	正	誤
表 紙 3			筆 者 紹 介	河添邦太郎教授	河添邦太郎助教授
42	左	↓25	本 文	[mole/cm ³] (sec) ⁿ	[mole/cm ³ sec ⁿ]
40	左	↑12	”	B _z	B _L