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!  This is a test program for FM 1.3, a multiple-precision arithmetic package.

!  All of the FM (floating-point real) and ZM (floating-point complex) routines are tested.
!  Precision is set to 50 significant digits and the results are checked to that accuracy.
!  A few constants are computed with 20,000 significant digits to test the routines that
!  use special algorithms for very high precision.
!  All of the IM (integer) routines are tested, with exact results required to pass the tests.
!  All of the USE FMZM derived type interface routines are tested in the same manner as those
!  described above.

!  If all tests are completed successfully, this line is printed:

!  3268 cases tested.  No errors were found.


      MODULE TEST_VARS

      USE FMVALS
      USE FMZM

!             Declare the derived type variables of type (FM), (IM), and (ZM).
!             These are in the form that would be found in a user program.

      TYPE (FM), SAVE ::  M_A, M_B, M_C, M_D, MFM1, MFM2, MFM3, MFM4, MFM5, MFM6, MSMALL,  &
                          MFMV1(3),  MFMV2(3),  MFMV4(3),  MFMV3(2),                       &
                          MFMA(3,3), MFMB(3,3), MFMC(3,3), MFMD(2,2), MFME(3,2), MFMF(2,3)

!             These are the integer multiple precision variables.

      TYPE (IM), SAVE :: M_J, M_K, M_L,  MIM1,  MIM2,  MIM3, MIM4, MIM5
      TYPE (IM), SAVE, DIMENSION(3)   :: MIMV1, MIMV2, MIMV4
      TYPE (IM), SAVE, DIMENSION(2)   :: MIMV3
      TYPE (IM), SAVE, DIMENSION(2,2) :: MIMA,  MIMB,  MIMC
      TYPE (IM), SAVE, DIMENSION(3,2) :: MIMD
      TYPE (IM), SAVE, DIMENSION(2,3) :: MIME
      TYPE (IM), SAVE, DIMENSION(3,3) :: MIMA2, MIMB2, MIMC2

!             These are the complex multiple precision variables.

      TYPE (ZM), SAVE :: M_X, M_Y, M_Z, MZM1, MZM2, MZM3, MZM4, MZM5,              &
                         MZMV1(3),   MZMV2(3),   MZMV4(3),   MZMV3(2),  MZMV5(4),  &
                         MZMA(2,3),  MZMB(3,4),  MZMC(2,4),  MZMD(3,2),            &
                         MZMA2(3,3), MZMB2(3,3), MZMC2(3,3), MZMA3(3,3)

!             Declare and initialize some other multiple precision variables.
!             These are in the internal form used in the basic arithmetic routines.

      INTEGER :: MA, MB, MC, MD, ME, MP1, MP2, MP3, MP4, MP5, MLNSV2, MLNSV3, MLNSV5, MLNSV7
      DATA MA, MB, MC, MD, ME, MP1, MP2, MP3, MP4, MP5, MLNSV2, MLNSV3, MLNSV5, MLNSV7 / 14 * -2 /
      INTEGER :: ZA(2), ZB(2), ZC(2), ZD(2), ZE(2), ZP1(2), ZP2(2), ZP3(2), ZP4(2), ZP5(2), ML(2)
      DATA ZA, ZB, ZC, ZD, ZE, ZP1, ZP2, ZP3, ZP4, ZP5 / 20 * -2 /

!             These are the variables that are not multiple precision.

      INTEGER, SAVE :: J1, J2, J3, J4, J5, JV(3), JV2(3,3)
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      REAL, SAVE :: R1, R2, R3, R4, R5, RSMALL, RV(3), RV2(3,3)
      DOUBLE PRECISION, SAVE :: D1, D2, D3, D4, D5, DSMALL, DV(3), DV2(3,3)
      COMPLEX, SAVE :: C1, C2, C3, C4, C5, CV(3), CV2(3,3)
      COMPLEX (KIND(0.0D0)), SAVE :: CD1, CD2, CD3, CD4, CDV(3), CDV2(3,3)

      CHARACTER(80), SAVE :: ST1, ST2, STRING, STV(3), STV2(3,3)
      CHARACTER(160), SAVE :: STZ1, STZ2
      CHARACTER, SAVE :: LINE(10), LINE2(80), LINE3(160)
      INTEGER, SAVE :: I, IREM, J, JERR, JEXP, K, KLOG, L1, L2, KST, KWSAVE,  &
                       NCASE, NDGSAV, NERROR, NSTACK(49), SEED(7)
      REAL, SAVE :: TIME1, TIME2
      LOGICAL, EXTERNAL :: FMCOMP, FMCOMPARE, FPCOMP, FPCOMPARE,  &
                           IMCOMP, IMCOMPARE, IPCOMP, IPCOMPARE

      END MODULE TEST_VARS

      MODULE TEST_A
      USE TEST_VARS

      INTERFACE POWER
         MODULE PROCEDURE POWER_FM
         MODULE PROCEDURE POWER_IM
         MODULE PROCEDURE POWER_ZM
      END INTERFACE

      INTERFACE MATRIX_PRODUCT
         MODULE PROCEDURE MATRIX_PRODUCT_FM
         MODULE PROCEDURE MATRIX_PRODUCT_IM
         MODULE PROCEDURE MATRIX_PRODUCT_ZM
      END INTERFACE

      INTERFACE MATRIX_SQUARE
         MODULE PROCEDURE MATRIX_SQUARE_FM
         MODULE PROCEDURE MATRIX_SQUARE_IM
         MODULE PROCEDURE MATRIX_SQUARE_ZM
      END INTERFACE

      CONTAINS

      SUBROUTINE TEST1

!  Input and output testing.

      IMPLICIT NONE

      WRITE (KW,"(/' Testing input and output routines.')")

!             NCASE is the number of the case being tested.

      NCASE = 1
      CALL FMST2M('123',MA)
      CALL FMI2M(123,MC)
      CALL FMSUB(MA,MC,MD)
      CALL FMABS(MD,ME)
      CALL FMEQ(ME,MD)
      CALL FMI2M(10,MB)
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      CALL FMIPOWER(MB,-48,ME)
      CALL FMEQ(ME,MB)

!             Use the .NOT. because FMCOMPARE returns FALSE for special cases like MD = UNKNOWN,
!             and these should be treated as errors for these tests.

      IF (.NOT.FMCOMPARE(MD,'LE',MB)) THEN
          CALL ERRPRTFM('FMST2M',MA,'MA',MC,'MC',MD,'MD')
      ENDIF

      NCASE = 2
      ST1 = '1.3505154639175257731958762886597938144329896907216495'
      CALL FMST2M(ST1,MA)
      CALL FMI2M(131,MB)
      CALL FMI2M(97,MC)
      CALL FMDIV(MB,MC,ME)
      CALL FMEQ(ME,MC)
      CALL FMSUB(MA,MC,MD)
      CALL FMABS(MD,ME)
      CALL FMEQ(ME,MD)
      CALL FMST2M('1.0E-50',MB)
      IF (.NOT.FMCOMPARE(MD,'LE',MB)) THEN
          CALL ERRPRTFM('FMST2M',MA,'MA',MC,'MC',MD,'MD')
      ENDIF

      NCASE = 3
      ST1 = '1.3505154639175257731958762886597938144329896907216495E-2'
      CALL FMST2M(ST1,MA)
      CALL FMI2M(131,MB)
      CALL FMI2M(9700,MC)
      CALL FMDIV(MB,MC,ME)
      CALL FMEQ(ME,MC)
      CALL FMSUB(MA,MC,MD)
      CALL FMABS(MD,ME)
      CALL FMEQ(ME,MD)
      CALL FMST2M('1.0E-52',MB)
      IF (.NOT.FMCOMP(MD,'LE',MB)) THEN
          CALL ERRPRTFM('FMST2M',MA,'MA',MC,'MC',MD,'MD')
      ENDIF

      NCASE = 4
      ST1 = '1.3505154639175257731958762886597938144329896907216495E-2'
      CALL FMST2M(ST1,MA)
      CALL FMFORM('F40.30',MA,ST2)
      CALL FMST2M(ST2,MA)
      ST1 = '         .013505154639175257731958762887'
      CALL FMST2M(ST2,MC)
      CALL FMSUB(MA,MC,MD)
      CALL FMABS(MD,ME)
      CALL FMEQ(ME,MD)
      CALL FMST2M('0',MB)
      IF ((.NOT.FMCOMP(MD,'LE',MB)) .OR. ST1 /= ST2) THEN
          CALL ERRPRTFM('FMFORM',MA,'MA',MC,'MC',MD,'MD')
      ENDIF

      NCASE = 5
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```
ST1 = '1.350515463917525773195876288659793814432989690721 6495E+16'
CALL FMST2M(ST1,MA)
CALL FMFORM('F53.33',MA,ST2)
CALL FMST2M(ST2,MA)
ST1 = '13505154639175257.731958762886597938144329896907216'
CALL FMST2M(ST1,MC)
CALL FMSUB(MA,MC,MD)
CALL FMABS(MD,ME)
CALL FMEQ(ME,MD)
CALL FMST2M('0',MB)
IF (.NOT.FMCOMP(MD,'LE',MB)) THEN
    CALL ERRPRTFM('FMFORM',MA,'MA',MC,'MC',MD,'MD')
ENDIF

NCASE = 6
ST1 = '1.350515463917525773195876288659793814432989690721 6495E+16'
CALL FMST2M(ST1,MA)
CALL FMFORM('I24',MA,ST2)
CALL FMST2M(ST2,MA)
ST1 = '13505154639175258'
CALL FMST2M(ST1,MC)
CALL FMSUB(MA,MC,MD)
CALL FMABS(MD,ME)
CALL FMEQ(ME,MD)
CALL FMST2M('0',MB)
IF (.NOT.FMCOMP(MD,'LE',MB)) THEN
    CALL ERRPRTFM('FMFORM',MA,'MA',MC,'MC',MD,'MD')
ENDIF

NCASE = 7
ST1 ='-1.350515463917525773195876288659793814432989690721 6495E+16'
CALL FMST2M(ST1,MA)
CALL FMFORM('E55.49',MA,ST2)
CALL FMST2M(ST2,MA)
ST1 = '-1.350515463917525773195876288659793814432989690722D16'
CALL FMST2M(ST1,MC)
CALL FMSUB(MA,MC,MD)
CALL FMABS(MD,ME)
CALL FMEQ(ME,MD)
CALL FMST2M('0',MB)
IF (.NOT.FMCOMP(MD,'LE',MB)) THEN
    CALL ERRPRTFM('FMFORM',MA,'MA',MC,'MC',MD,'MD')
ENDIF

NCASE = 8
ST1 ='-1.350515463917525773195876288659793814432989690721 6495E+16'
CALL FMST2M(ST1,MA)
CALL FMFORM('ES54.45',MA,ST2)
CALL FMST2M(ST2,MA)
ST1 = '-1.350515463917525773195876288659793814432989691M+16'
CALL FMST2M(ST1,MC)
CALL FMSUB(MA,MC,MD)
CALL FMABS(MD,ME)
CALL FMEQ(ME,MD)
CALL FMST2M('0',MB)
IF (.NOT.FMCOMP(MD,'LE',MB)) THEN
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    CALL ERRPRTFM('FMFORM',MA,'MA',MC,'MC',MD,'MD')
ENDIF

NCASE = 9
ST1 ='-1.350515463917525773195876288659793814432989690721649 5E+16'
CALL FMST2M(ST1,MA)
CALL FMFORM('1PE54.45',MA,ST2)
CALL FMST2M(ST2,MA)
ST1 = '-1.350515463917525773195876288659793814432989691M+16'
CALL FMST2M(ST1,MC)
CALL FMSUB(MA,MC,MD)
CALL FMABS(MD,ME)
CALL FMEQ(ME,MD)
CALL FMST2M('0',MB)
IF (.NOT.FMCOMP(MD,'LE',MB)) THEN
    CALL ERRPRTFM('FMFORM',MA,'MA',MC,'MC',MD,'MD')
ENDIF

CALL FM_SETVAR(' MBASE = 10000 ')
CALL FM_SETVAR(' NDIG = 7 ')
CALL FMSETVAR(' KROUND = 1 ')

NCASE = 10
STZ1 = '0.12345678901234567890123456784999999999999999999999999999999999999999999999999999999999999999999'
M_C =  TO_FM(STZ1)
STZ1 = '0.12345678901234567890123456 78'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 11
STZ1 = '0.12345678901234567890123456785'
M_C =  TO_FM(STZ1)
STZ1 = '0.12345678901234567890123456 78'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 12
STZ1 = '0.12345678901234567890123456785'
M_C =  TO_FM(STZ1)
STZ1 = '0.12345678901234567890123456 78'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 13
STZ1 = '0.12345678901234567890123456775'
M_C =  TO_FM(STZ1)
STZ1 = '0.12345678901234567890123456 78'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
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ENDIF

NCASE = 14
STZ1 = '0.12345678901234567890123456785000000000000000000000000000000000000000000000000000001'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 9'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 2 ')

NCASE = 15
STZ1 = '0.12345678901234567890123456779999999999999999999999999999999999999999999999999999999'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 8'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 16
STZ1 = '0.12345678901234567890123456770000000000000000000000000000000000000000000000000000000'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 7'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 17
STZ1 = '0.12345678901234567890123456770000000000000000000000000000000000000000000000000000001'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 8'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = -1 ')

NCASE = 18
STZ1 = '0.12345678901234567890123456779999999999999999999999999999999999999999999999999999999'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 7'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 19
STZ1 = '0.12345678901234567890123456770000000000000000000000000000000000000000000000000000000'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 7'
M_D = TO_FM(STZ1)
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IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 20
STZ1 = '0.12345678901234567890123456770000000000000000000000000000000000000000000000000000000001'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 7'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 0 ')

NCASE = 21
STZ1 = '0.12345678901234567890123456779999999999999999999999999999999999999999999999999999999999'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 7'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 22
STZ1 = '0.12345678901234567890123456770000000000000000000000000000000000000000000000000000000000'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 7'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 23
STZ1 = '0.12345678901234567890123456770000000000000000000000000000000000000000000000000000000001'
M_C =  TO_FM(STZ1)
STZ1 = '0.123456789012345678901234567 7'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF



CALL FMSETVAR(' KROUND = 1 ')

NCASE = 24
STZ1 = '-0.12345678901234567890123456784999999999999999999999999999999999999999999999999999999999'
M_C =  TO_FM(STZ1)
STZ1 = '-0.123456789012345678901234568 8'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 25
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STZ1 = '-0.12345678901234567890123456785'
M_C =  TO_FM(STZ1)
STZ1 = '-0.12345678901234567890123456678'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 26
STZ1 = '-0.12345678901234567890123456785'
M_C =  TO_FM(STZ1)
STZ1 = '-0.12345678901234567890123456678'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 27
STZ1 = '-0.12345678901234567890123456775'
M_C =  TO_FM(STZ1)
STZ1 = '-0.12345678901234567890123456678'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 28
STZ1 = '-0.12345678901234567890123456785000000000000000000000000000000000000000000000000000000000000001'
M_C =  TO_FM(STZ1)
STZ1 = '-0.12345678901234567890123456679'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 2 ')

NCASE = 29
STZ1 = '-0.12345678901234567890123456779999999999999999999999999999999999999999999999999999999999999999'
M_C =  TO_FM(STZ1)
STZ1 = '-0.12345678901234567890123456677'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 30
STZ1 = '-0.12345678901234567890123456770000000000000000000000000000000000000000000000000000000000000000'
M_C =  TO_FM(STZ1)
STZ1 = '-0.12345678901234567890123456677'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 31
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```
STZ1 = '-0.12345678901234567890123456770000000000000000000000000000000000000000000000000001'
M_C =  TO_FM(STZ1)
STZ1 = '-0.123456789012345678901234567'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = -1 ')

NCASE = 32
STZ1 = '-0.12345678901234567890123456779999999999999999999999999999999999999999999999999999'
M_C =  TO_FM(STZ1)
STZ1 = '-0.1234567890123456789012345678'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 33
STZ1 = '-0.12345678901234567890123456770000000000000000000000000000000000000000000000000000'
M_C =  TO_FM(STZ1)
STZ1 = '-0.123456789012345678901234567'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 34
STZ1 = '-0.12345678901234567890123456770000000000000000000000000000000000000000000000000001'
M_C =  TO_FM(STZ1)
STZ1 = '-0.1234567890123456789012345678'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 0 ')

NCASE = 35
STZ1 = '-0.12345678901234567890123456779999999999999999999999999999999999999999999999999999'
M_C =  TO_FM(STZ1)
STZ1 = '-0.123456789012345678901234567'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 36
STZ1 = '-0.12345678901234567890123456770000000000000000000000000000000000000000000000000000'
M_C =  TO_FM(STZ1)
STZ1 = '-0.123456789012345678901234567'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF
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NCASE = 37
STZ1 = '-0.12345678901234567890123456770000000000000000000000000000000000000000000000000000000001'
M_C =  TO_FM(STZ1)
STZ1 = '-0.123456789012345678901234567'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 1 ')
CALL FM_SETVAR(' MBASE = 2 ')
CALL FM_SETVAR(' NDIG = 53 ')

NCASE = 38
STZ1 = '0.9'
M_C =  TO_FM(STZ1)
M_D = TO_FM(9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 39
STZ1 = '0.9'
M_C =  TO_FM(STZ1)
STZ1 = '0.900000000000000022204460492503130808472633361816406 25'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 40
STZ1 = '0.900000000000000077715611723760957829654216766357421875'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(9)/10 , TO_FM(1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 41
STZ1 = '0.900000000000000077715611723760957829654216766357421875000000000000000000000000001'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(9)/10 , TO_FM(1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 42
STZ1 = '0.900000000000000077715611723760957829654216766357421874999999999999999999999999999'
M_C =  TO_FM(STZ1)
M_D = TO_FM(9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 2 ')
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```
NCASE = 43
STZ1 = '0.9'
M_C =  TO_FM(STZ1)
M_D = TO_FM(9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 44
STZ1 = '0.9'
M_C =  TO_FM(STZ1)
STZ1 = '0.900000000000000022204460492503130808472633361816406 25'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 45
STZ1 = '0.900000000000000022204460492503130808472633361816406250000000000000000000000000000001'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(9)/10 , TO_FM(1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 46
STZ1 = '0.900000000000000022204460492503130808472633361816406249999999999999999999999999999'
M_C =  TO_FM(STZ1)
M_D = TO_FM(9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = -1 ')

NCASE = 47
STZ1 = '0.9'
M_C =  TO_FM(STZ1)
M_D = TO_FM(9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 48
STZ1 = '0.9'
M_C =  TO_FM(STZ1)
STZ1 = '0.899999999999999991118215802998747676610946655 2734375'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 49
STZ1 = '0.899999999999999991118215802998747676610946655273437500000000000000000000000000001'
M_C =  TO_FM(STZ1)
```

```
M_D = TO_FM(9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 50
STZ1 = '0.899999999999999991118215802998747676610946655273437499999999999999999999999999999'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(9)/10 , TO_FM(-1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 0 ')

NCASE = 51
STZ1 = '0.9'
M_C =  TO_FM(STZ1)
M_D = TO_FM(9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 52
STZ1 = '0.9'
M_C =  TO_FM(STZ1)
STZ1 = '0.899999999999999991118215802998747676610946655273437 5'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 53
STZ1 = '0.899999999999999991118215802998747676610946655273437500000000000000000000000000001'
M_C =  TO_FM(STZ1)
M_D = TO_FM(9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 54
STZ1 = '0.899999999999999991118215802998747676610946655273437499999999999999999999999999999'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(9)/10 , TO_FM(-1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 1 ')

NCASE = 55
STZ1 = '-0.9'
M_C =  TO_FM(STZ1)
M_D = TO_FM(-9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
```

```
ENDIF

NCASE = 56
STZ1 = '-0.9'
M_C =  TO_FM(STZ1)
STZ1 = '-0.900000000000000022204460492503130808472633361816406250'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 57
STZ1 = '-0.900000000000000077715611723760957829654216766357421875'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(-9)/10 , TO_FM(-1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 58
STZ1 = '-0.900000000000000077715611723760957829654216766357421875000000000000000000000000000001'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(-9)/10 , TO_FM(-1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 59
STZ1 = '-0.900000000000000077715611723760957829654216766357421874999999999999999999999999999'
M_C =  TO_FM(STZ1)
M_D = TO_FM(-9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 2 ')

NCASE = 60
STZ1 = '-0.9'
M_C =  TO_FM(STZ1)
M_D = TO_FM(-9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 61
STZ1 = '-0.9'
M_C =  TO_FM(STZ1)
STZ1 = '-0.899999999999999911182158029987476766109466552734375'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 62
STZ1 = '-0.899999999999999911182158029987476766109466552734375000000000000000000000000000001'
```

```
M_C =  TO_FM(STZ1)
M_D = TO_FM(-9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 63
STZ1 = '-0.899999999999999991118215802998747676610946655273437499999999999999999999999999999999'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(-9)/10 , TO_FM(1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = -1 ')

NCASE = 64
STZ1 = '-0.9'
M_C =  TO_FM(STZ1)
M_D = TO_FM(-9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 65
STZ1 = '-0.9'
M_C =  TO_FM(STZ1)
STZ1 = '-0.900000000000000022204460492503130808472633361816406 25'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 66
STZ1 = '-0.900000000000000022204460492503130808472633361816406250000000000000000000000000001'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(-9)/10 , TO_FM(-1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 67
STZ1 = '-0.900000000000000022204460492503130808472633361816406249999999999999999999999999999'
M_C =  TO_FM(STZ1)
M_D = TO_FM(-9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FMSETVAR(' KROUND = 0 ')

NCASE = 68
STZ1 = '-0.9'
M_C =  TO_FM(STZ1)
M_D = TO_FM(-9)/10
IF (.NOT.(M_D == M_C)) THEN
```

```
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 69
STZ1 = '-0.9'
M_C =  TO_FM(STZ1)
STZ1 = '-0.899999999999999991118215802998747676610946655273437 5'
M_D = TO_FM(STZ1)
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 70
STZ1 = '-0.899999999999999991118215802998747676610946655273437499999999999999999999999999999'
M_C =  TO_FM(STZ1)
M_D = NEAREST( TO_FM(-9)/10 , TO_FM(1) )
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

NCASE = 71
STZ1 = '-0.899999999999999991118215802998747676610946655273437500000000000000000000000000001'
M_C =  TO_FM(STZ1)
M_D = TO_FM(-9)/10
IF (.NOT.(M_D == M_C)) THEN
    CALL ERRPRT_FM(' Input',M_C,'M_C',M_C,'M_C',M_D,'M_D')
ENDIF

CALL FM_SETVAR(' MBASE = 10000 ')
CALL FM_SETVAR(' NDIG = 25 ')
CALL FMSETVAR(' KROUND = 1 ')

NCASE = 72
STZ1 = '0.1234567890123456'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F20.14',M_A,ST1)
WRITE (ST2,"(F20.14)") TO_DP(M_A)
K = INDEX(ST2,'0.')
IF (K > 0) ST2(K:K) = ' '
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 73
STZ1 = '3.1234567890123456'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F20.14',M_A,ST1)
WRITE (ST2,"(F20.14)") TO_DP(M_A)
K = INDEX(ST2,'0.')
IF (K > 0) ST2(K:K) = ' '
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 74
STZ1 = '-3.1234567890123456'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F20.13',M_A,ST1)
WRITE (ST2,"(F20.13)") TO_DP(M_A)
K = INDEX(ST2,'0.')
```

```
IF (K > 0) ST2(K:K) = ' '
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 75
STZ1 = '3.1234567890123456e4'
M_A =  TO_FM(STZ1)
CALL FM_FORM('E25.14',M_A,ST1)
WRITE (ST2,"(E25.14)") TO_DP(M_A)
K = INDEX(ST2,'E+05')
IF (K > 0) ST2(K:K+3) = 'M+5 '
K = INDEX(ST2,'0.')
IF (K > 0) THEN
    STZ2 = ST2(K+1:30)
    ST2(2:31) = STZ2(1:30)
ENDIF
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 76
STZ1 = '-3.1234567890123456e4'
M_A =  TO_FM(STZ1)
CALL FM_FORM('E25.13',M_A,ST1)
WRITE (ST2,"(E25.13)") TO_DP(M_A)
K = INDEX(ST2,'E+05')
IF (K > 0) ST2(K:K+3) = 'M+5 '
K = INDEX(ST2,'-0.')
IF (K > 0) THEN
    ST2(K:K+1) = ' -'
    STZ2 = ST2(K+1:31)
    ST2(1:30) = STZ2(1:30)
ENDIF
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 77
STZ1 = '3.1234567890123456e4'
M_A =  TO_FM(STZ1)
CALL FM_FORM('ES25.14',M_A,ST1)
WRITE (ST2,"(ES25.14)") TO_DP(M_A)
K = INDEX(ST2,'E+04')
IF (K > 0) ST2(K:K+3) = 'M+4 '
K = INDEX(ST2,'3.')
IF (K > 0) THEN
    STZ2 = ST2(K:30)
    ST2(2:31) = STZ2(1:30)
ENDIF
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 78
STZ1 = '-3.1234567890123456e4'
M_A =  TO_FM(STZ1)
CALL FM_FORM('ES25.13',M_A,ST1)
WRITE (ST2,"(ES25.13)") TO_DP(M_A)
K = INDEX(ST2,'E+04')
IF (K > 0) ST2(K:K+3) = 'M+4 '
K = INDEX(ST2,'-3.')
IF (K > 0) THEN
    STZ2 = ST2(K:31)
```

```
    ST2(1:30) = STZ2(1:30)
ENDIF
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 79
STZ1 = '0.12345678901234567890123456784999999999999999999999999999999999999999999999999999999999'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  .12345678901234567890123456 78'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 80
STZ1 = '0.12345678901234567890123456785000000000000000000000000000000000000000000000000000000001'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  .12345678901234567890123456 79'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 81
STZ1 = '0.12345678901234567890123456785000000000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  .12345678901234567890123456 78'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 82
STZ1 = '0.12345678901234567890123456775000000000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  .12345678901234567890123456 78'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 83
STZ1 = '0.12345678901234567890123456749999999999999999999999999999999999999999999999999999999999'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  .123456789012345678901234567'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 84
STZ1 = '0.12345678901234567890123456750000000000000000000000000000000000000000000000000000000001'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  .123456789012345678901234568'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 85
STZ1 = '0.12345678901234567890123456750000000000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
```

```
ST2 = '  .12345678901234567890123456 8'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 86
STZ1 = '0.12345678901234567890123456650000000000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  .12345678901234567890123456 6'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 87
STZ1 = '-0.12345678901234567890123456784999999999999999999999999999999999999999999999999999999999'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  -.12345678901234567890123456 78'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 88
STZ1 = '-0.12345678901234567890123456785000000000000000000000000000000000000000000000000000000001'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  -.12345678901234567890123456 79'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 89
STZ1 = '-0.12345678901234567890123456785000000000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  -.12345678901234567890123456 78'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 90
STZ1 = '-0.12345678901234567890123456775000000000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  -.12345678901234567890123456 78'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 91
STZ1 = '-0.12345678901234567890123456749999999999999999999999999999999999999999999999999999999999'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  -.12345678901234567890123456 7'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 92
STZ1 = '-0.12345678901234567890123456750000000000000000000000000000000000000000000000000000000001'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
```

```
ST2 = '  -.12345678901234567890123456'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 93
STZ1 = '-0.12345678901234567890123456750000000000000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  -.12345678901234567890123456'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 94
STZ1 = '-0.12345678901234567890123456650000000000000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  -.12345678901234567890123456'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

CALL FM_SETVAR(' MBASE = 10000 ')
CALL FM_SETVAR(' NDIG = 25 ')
CALL FMSETVAR(' KROUND = 2 ')

NCASE = 95
STZ1 = '0.12345678901234567890123456789999999999999999999999999999999999999999999999999999999999999'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  .1234567890123456789012345679'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 96
STZ1 = '0.12345678901234567890123456780000000000000000000000000000000000000000000000000000000000001'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  .1234567890123456789012345679'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 97
STZ1 = '0.12345678901234567890123456780000000000000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  .1234567890123456789012345678'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 98
STZ1 = '0.12345678901234567890123456799999999999999999999999999999999999999999999999999999999999999'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  .1234567890123456789012345678'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)
```

```
NCASE = 99
STZ1 = '0.12345678901234567890123456700000000000000000000000000000000000000000000000000001'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  .123456789012345678901234568'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 100
STZ1 = '0.12345678901234567890123456700000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  .123456789012345678901234567'
ST2 = '    '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 101
STZ1 = '-0.12345678901234567890123456789999999999999999999999999999999999999999999999999999'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  -.12345678901234567890123456789'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 102
STZ1 = '-0.12345678901234567890123456780000000000000000000000000000000000000000000000000001'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  -.12345678901234567890123456789'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 103
STZ1 = '-0.12345678901234567890123456780000000000000000000000000000000000000000000000000000'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F35.28',M_A,ST1)
ST2 = '  -.12345678901234567890123456789'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 104
STZ1 = '-0.12345678901234567890123456799999999999999999999999999999999999999999999999999999'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  -.123456789012345678901234567'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)

NCASE = 105
STZ1 = '-0.12345678901234567890123456700000000000000000000000000000000000000000000000000001'
M_A =  TO_FM(STZ1)
CALL FM_FORM('F34.27',M_A,ST1)
ST2 = '  -.123456789012345678901234567'
ST2 = '   '//ST2
IF (.NOT.(ST1 == ST2)) CALL ERRPRT_STR(ST1,ST2)
```