

! Test version 1.4 of FM_parallel.f95, the thread-safe version of the FM package, using CoArrays.

```
PROGRAM TEST
USE FMVALS_PARALLEL
USE FMZM_PARALLEL
IMPLICIT NONE

INTERFACE
FUNCTION Z_TEST_FUNCTION(XI,NI,QX)      RESULT (RETURN_VALUE)
USE FMVALS_PARALLEL
IMPLICIT NONE
TYPE (MULTI) :: XI(2)
INTEGER :: NI
TYPE (MULTI), DIMENSION(2) :: RETURN_VALUE
TYPE(FM_SETTINGS) :: QX
END FUNCTION Z_TEST_FUNCTION
END INTERFACE
INTEGER, PARAMETER :: N_VALS = 10, MAX_CASE = 500
INTEGER :: L, N_ERRORS, SKIP, SKIP_CHECK(30)
DOUBLE PRECISION :: TIME1, TIME2
CHARACTER(8) :: FILE_NUMBER
CHARACTER(25) :: FILE_NAME
CHARACTER(251) :: LINE1, LINE2
LOGICAL :: CHK_FILE_EXISTS
TYPE(FM), EXTERNAL :: FM_FPRIME
TYPE(ZM), EXTERNAL :: ZM_FPRIME
TYPE(MULTI), EXTERNAL :: F_TEST_FUNCTION
EXTERNAL :: FM_RK14_F
```

! Declare the coarray variables.

```
TYPE (FM) :: X1[*], X2[*], R[*], X_VALS(2*N_VALS)[*], &
            A(5,5)[*], B(5)[*], X(5)[*], DET[*], AINV(5,5)[*], &
            AX[*], BX[*], TOL[*], XVAL[*], FVAL[*], S(3)[*], S1(3)[*]
TYPE (IM) :: I1[*]
TYPE (ZM) :: Z1[*], Z2[*], Z3[*], ZA(5,5)[*], ZB(5)[*], ZX(5)[*], ZDET[*], ZAINV(5,5)[*], &
            LIST_OF_ROOTS(8)[*]
INTEGER :: I[*], N_CASE[*], J[*], K[*], N_FOUND[*], N_ORDER[*], N_FUNCTION[*]
DOUBLE PRECISION :: RM[*], RAN(4*N_VALS*MAX_CASE)[*]
```

! The first section is not run in parallel.

```
if (this_image() .eq. 1) then
CALL CLOCK_TIME(TIME1)
endif
```

sync all

! Test each operation at 2*N_VALS different arguments.

```
X1 = TO_FM('0.001234')
X2 = TO_FM('987.6')
R = (X2/X1) ** (TO_FM(1)/(N_VALS-1))
CALL FM_FORM('ES60.50',R,LINE1)
R = TO_FM(TRIM(LINE1))
X_VALS(1) = X1
DO J = 2, N_VALS
```

```

X_VALS(J) = R * X_VALS(J-1)
CALL FM_FORM('E560.50',X_VALS(J),LINE1)
X_VALS(J) = TO_FM(TRIM(LINE1))
ENDDO
DO J = 1, N_VALS
  X_VALS(J+N_VALS) = -X_VALS(J)
ENDDO

RM = 2.0D0**31 - 1
RAN(1) = RM / 3
DO J = 2, 4*N_VALS*MAX_CASE
  RAN(J) = MOD( 314159.0D0 * RAN(J-1) , RM )
ENDDO
RAN = RAN/RM
RAN = RAN*(2*N_VALS) + 1

```

sync all

! Run the test cases in parallel.

```

DO I = this_image(), 2*N_VALS, num_images()

  IF (I == this_image()) THEN
    WRITE(FILE_NUMBER,"(I8)") this_image()
    FILE_NAME = TRIM( 'TestFM_parallel' // ADJUSTL(FILE_NUMBER) ) // '.out'
    OPEN(30+this_image(),FILE=TRIM(FILE_NAME))
  ENDF

  N_CASE = 1
  CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
  X1 = X_VALS(J) + X_VALS(K)
  CALL OUTPUT(I,N_CASE,X1)

  N_CASE = 2
  CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
  X1 = X_VALS(J) - X_VALS(K)
  CALL OUTPUT(I,N_CASE,X1)

  N_CASE = 3
  CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
  X1 = X_VALS(J) * X_VALS(K)
  CALL OUTPUT(I,N_CASE,X1)

  N_CASE = 4
  CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
  X1 = X_VALS(J) / X_VALS(K)
  CALL OUTPUT(I,N_CASE,X1)

  N_CASE = 5
  CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
  X1 = X_VALS(J) ** X_VALS(K)
  CALL OUTPUT(I,N_CASE,X1)

  N_CASE = 6
  CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
  X1 = SQRT(X_VALS(J))
  CALL OUTPUT(I,N_CASE,X1)

```

```
N_CASE = 7
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = (X_VALS(I)) ** 2
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 8
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = SIN(X_VALS(I))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 9
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = COS(X_VALS(I))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 10
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = TAN(X_VALS(I))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 11
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1.0,1.0,J,K)
X1 = ASIN(X_VALS(J))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 12
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1.0,1.0,J,K)
X1 = ACOS(X_VALS(J))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 13
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = ATAN(X_VALS(I))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 14
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = SINH(X_VALS(I))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 15
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = COSH(X_VALS(I))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 16
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = TANH(X_VALS(I))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 17
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = ASINH(X_VALS(I))
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 18
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,1.0,1001.0,J,K)
```

```
X1 = ACOSH(X_VALS(J))  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 19  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1.0,1.0,J,K)  
X1 = ATANH(X_VALS(J))  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 20  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)  
X1 = EXP(X_VALS(I))  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 21  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)  
X1 = LOG(X_VALS(J))  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 22  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)  
X1 = EXP(X_VALS(I)) + TO_FM(2)  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 23  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)  
X1 = EXP( X_VALS(I)) + TO_FM('2.1') )  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 24  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)  
X1 = EXP( X_VALS(I)) + TO_FM('2.2D0') )  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 25  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)  
X1 = EXP( X_VALS(I)) + TO_FM('2.3') )  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 26  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)  
X1 = EXP( X_VALS(I)) + TO_FM(TO_ZM('2.4+2.5i')) )  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 27  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)  
X1 = EXP( X_VALS(I)) + TO_FM(TO_ZM('2.5D0+2.6D0i')) )  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 28  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)  
X1 = EXP( X_VALS(I)) + TO_FM((X_VALS(I))/10) )  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 29  
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)  
X1 = EXP( X_VALS(I)) + TO_FM(TO_IM(2)) )  
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 30
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP( X_VALS(I)) + TO_FM(TO_ZM('2.01+2.01i')) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 31
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP(X_VALS(I)) + TO_IM(2)
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 32
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP( X_VALS(I)) + TO_IM(2.1) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 33
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP( X_VALS(I)) + TO_IM(2.2D0) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 34
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP( X_VALS(I)) + TO_IM('2.3') )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 35
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP( X_VALS(I)) + TO_IM(TO_ZM('2.4+2.5i')) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 36
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP( X_VALS(I)) + TO_IM(TO_ZM('2.5D0+2.6D0i')) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 37
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP( X_VALS(I)) + TO_IM((X_VALS(I))/10) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 38
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP( X_VALS(I)) + TO_IM(TO_IM(2)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 39
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP( X_VALS(I)) + TO_IM(TO_ZM('2.01+2.01i')) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 40
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = INT( X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 41
CALL ARG$(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = NINT( X_VALS(I)) )
```

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 42

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

X1 = FLOOR(X_VALS(I))

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 43

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

X1 = CEILING(X_VALS(I))

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 44

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

X1 = MOD(X_VALS(J) , X_VALS(K))

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 45

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

X1 = MOD(TO_IM(X_VALS(J)) + 12345678 , TO_IM(X_VALS(K)) + 1234)

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 46

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

X1 = GCD(TO_IM(X_VALS(J)) + 12345678 , TO_IM(X_VALS(K)) + 1234)

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 47

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

X1 = FACTORIAL(X_VALS(I))

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 48

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

X1 = GAMMA(X_VALS(I))

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 49

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

X1 = GAMMA(X_VALS(I)) + 1)

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 50

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)

X1 = LOG_GAMMA(X_VALS(J))

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 51

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

X1 = BINOMIAL(X_VALS(J) , X_VALS(K))

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 52

CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

CALL FM_EULER(X1)

CALL OUTPUT(I,N_CASE,X1)

N_CASE = 53

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = BERNOULLI( TO_INT(ABS(X_VALS(I))) + 12 + I )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 54

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = BETA( X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 55

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = PSI( (X_VALS(J)) + TO_FM('0.12345') )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 56

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = POLYGAMMA( I , (X_VALS(J)) + TO_FM('0.12345') )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 57

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = POCHHAMMER( (X_VALS(J)) + TO_FM('0.12345') , I )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 58

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = INCOMPLETE_GAMMA1( X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 59

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = INCOMPLETE_GAMMA2( X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 60

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = BESSEL_J( I , (X_VALS(I)) + TO_FM('0.12345') )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 61

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = BESSEL_Y( I , (X_VALS(J)) + TO_FM('0.12345') )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 62

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = BESSEL_J0( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 63

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = BESSEL_J1( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 64

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = BESSEL_Y0( (X_VALS(J)) )
CALL OUTPUT(I,N_CASE,X1)
```

```

N_CASE = 65
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = BESSEL_Y1( (X_VALS(J)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 66
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = COS_INTEGRAL( (X_VALS(J)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 67
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = COSH_INTEGRAL( (X_VALS(J)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 68
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = ERF( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 69
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = ERFC( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 70
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = ERFC_SCALED( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 71
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXP_INTEGRAL_EI( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 72
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = EXP_INTEGRAL_EN( I , (X_VALS(J)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 73
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = FRESNEL_CC( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 74
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = FRESNEL_SC( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 75
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X2 = TO_FM(I) / (2*N_VALS+1)
X1 = INCOMPLETE_BETA( X2, X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 76

```



```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = LOG_ERFCC( X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 77

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = LOG_INTEGRAL( X_VALS(J)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 78

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = SIN_INTEGRAL( X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 79

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = SINH_INTEGRAL( X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 80

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (X_VALS(J) == X_VALS(K)) THEN
    X1 = X_VALS(J)
ELSE
    X1 = X_VALS(K)
ENDIF
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 81

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (X_VALS(J) /= X_VALS(K)) THEN
    X1 = X_VALS(J)
ELSE
    X1 = X_VALS(K)
ENDIF
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 82

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (X_VALS(J) < X_VALS(K)) THEN
    X1 = X_VALS(J)
ELSE
    X1 = X_VALS(K)
ENDIF
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 83

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (X_VALS(J) <= X_VALS(K)) THEN
    X1 = X_VALS(J)
ELSE
    X1 = X_VALS(K)
ENDIF
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 84

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (X_VALS(J) > X_VALS(K)) THEN
```

```

        X1 = X_VALS(J)
ELSE
        X1 = X_VALS(K)
ENDIF
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 85
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (X_VALS(J) >= X_VALS(K)) THEN
        X1 = X_VALS(J)
ELSE
        X1 = X_VALS(K)
ENDIF
CALL OUTPUT(I,N_CASE,X1)

N_CASE = 86
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J)) + TO_IM(TO_FM('1.0D+43')*X_VALS(K))
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 87
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J)) - TO_IM(TO_FM('1.0D+43')*X_VALS(K))
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 88
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J)) * TO_IM(TO_FM('1.0D+43')*X_VALS(K))
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 89
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J)) / TO_IM(TO_FM('1.0D+43')*X_VALS(K))
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 90
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (TO_IM(TO_FM('1.0D+41')*X_VALS(J)) == TO_IM(TO_FM('1.0D+43')*X_VALS(K))) THEN
        I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J))
ELSE
        I1 = TO_IM(TO_FM('1.0D+43')*X_VALS(K))
ENDIF
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 91
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (TO_IM(TO_FM('1.0D+41')*X_VALS(J)) /= TO_IM(TO_FM('1.0D+43')*X_VALS(K))) THEN
        I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J))
ELSE
        I1 = TO_IM(TO_FM('1.0D+43')*X_VALS(K))
ENDIF
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 92
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (TO_IM(TO_FM('1.0D+41')*X_VALS(J)) <= TO_IM(TO_FM('1.0D+43')*X_VALS(K))) THEN
        I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J))
ELSE

```

```

      I1 = TO_IM(TO_FM('1.0D+43')*X_VALS(K))
ENDIF
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 93
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (TO_IM(TO_FM('1.0D+41')*X_VALS(J)) < TO_IM(TO_FM('1.0D+43')*X_VALS(K))) THEN
      I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J))
ELSE
      I1 = TO_IM(TO_FM('1.0D+43')*X_VALS(K))
ENDIF
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 94
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (TO_IM(TO_FM('1.0D+41')*X_VALS(J)) >= TO_IM(TO_FM('1.0D+43')*X_VALS(K))) THEN
      I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J))
ELSE
      I1 = TO_IM(TO_FM('1.0D+43')*X_VALS(K))
ENDIF
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 95
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
IF (TO_IM(TO_FM('1.0D+41')*X_VALS(J)) > TO_IM(TO_FM('1.0D+43')*X_VALS(K))) THEN
      I1 = TO_IM(TO_FM('1.0D+41')*X_VALS(J))
ELSE
      I1 = TO_IM(TO_FM('1.0D+43')*X_VALS(K))
ENDIF
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 96
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = ABS(TO_IM(TO_FM('1.0D+41')*(X_VALS(I))))
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 97
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = BINOMIAL(TO_IM(100),TO_IM(50))
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 98
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = CEILING(TO_IM(TO_FM('1.0D+41')*(X_VALS(I))))
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 99
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = DIGITS(TO_IM(TO_FM('1.0D+41')*(X_VALS(I))))
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 100
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = DIM(TO_IM(TO_FM('1.0D+41')*X_VALS(J)),TO_IM(TO_FM('1.0D+43')*X_VALS(K)))
CALL OUTPUT_IM(I,N_CASE,I1)

N_CASE = 101
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)

```

```
I1 = FACTORIAL(TO_IM(50))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 102
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = FLOOR(TO_IM(TO_FM('1.0D+41')*(X_VALS(I))))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 103
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = GCD(TO_IM(TO_FM('1.0D+41')*X_VALS(J)) , TO_IM(TO_FM('1.0D+43')*X_VALS(K)))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 104
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = INT(TO_IM(TO_FM('1.0D+41')*(X_VALS(I))))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 105
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = MAX(TO_IM(TO_FM('1.0D+41')*X_VALS(J)) , TO_IM(TO_FM('1.0D+43')*X_VALS(K)))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 106
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = MIN(TO_IM(TO_FM('1.0D+41')*X_VALS(J)) , TO_IM(TO_FM('1.0D+43')*X_VALS(K)))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 107
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = MOD(TO_IM(TO_FM('1.0D+41')*X_VALS(J)) , TO_IM(TO_FM('1.0D+43')*X_VALS(K)))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 108
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = MODULO(TO_IM(TO_FM('1.0D+41')*X_VALS(J)) , TO_IM(TO_FM('1.0D+43')*X_VALS(K)))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 109
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = MULTIPLY_MOD(TO_IM(TO_FM('1.0D+41')*X_VALS(J)) , TO_IM(TO_FM('1.0D+43')*X_VALS(K)) , &
TO_IM('1234567'))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 110
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = NINT(TO_IM(TO_FM('1.0D+41')*(X_VALS(I))))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 111
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = POWER_MOD(ABS(TO_IM(TO_FM('1.0D+41')*X_VALS(J))) , &
ABS(TO_IM(TO_FM('1.0D+43')*X_VALS(K))) , TO_IM('1234567'))
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 112
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
I1 = RADIX(TO_IM(TO_FM('1.0D+41')*(X_VALS(I))))
```

```
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 113
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
I1 = RANGE(TO_IM(TO_FM('1.0D+41')*(X_VALS(I))))
```

```
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 114
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
I1 = SIGN(TO_IM(TO_FM('1.0D+41')*X_VALS(J)) , TO_IM(TO_FM('1.0D+43')*X_VALS(K)))
```

```
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 115
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
I1 = TINY(TO_IM(TO_FM('1.0D+41')*(X_VALS(I))))
```

```
CALL OUTPUT_IM(I,N_CASE,I1)
```

```
N_CASE = 116
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
X1 = ABS( (X_VALS(I)) )
```

```
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 117
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
X1 = AINT( (X_VALS(I)) )
```

```
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 118
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
X1 = ANINT( (X_VALS(I)) )
```

```
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 119
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
X1 = ATAN2( X_VALS(J) , X_VALS(K) )
```

```
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 120
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
X1 = CEILING( (X_VALS(I)) )
```

```
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 121
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
X1 = DBLE( (X_VALS(I)) )
```

```
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 122
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
X1 = DIGITS( (X_VALS(I)) )
```

```
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 123
```

```
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
X1 = DIM( X_VALS(J) , X_VALS(K) )
```

```
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 124
```

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = DINT( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 125

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EPSILON( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 126

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = EXPONENT( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 127

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = FLOOR( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 128

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = FRACTION( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 129

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = HUGE( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 130

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = HYPOT( X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 131

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = INT( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 132

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,0.0,1001.0,J,K)
X1 = LOG10( (X_VALS(J)) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 133

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = MAX( X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 134

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = MIN( X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 135

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = MAXEXPONENT( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 136
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = MINEXPONENT( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 137
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = MODULO( X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 138
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = NEAREST( X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 139
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = NINT( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 140
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = PRECISION( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 141
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = RADIX( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 142
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = RANGE( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 143
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = RRSPACING( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 144
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = SCALE( (X_VALS(I)) , 4 )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 145
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = SIGN( X_VALS(J) , X_VALS(K) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 146
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
X1 = SPACING( (X_VALS(I)) )
CALL OUTPUT(I,N_CASE,X1)
```

```
N_CASE = 147
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```

```
CALL FM_COSH_SINH( (X_VALS(I)) , X1 , X2 )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 148

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
CALL FM_COSH_SINH( (X_VALS(I)) , X1 , X2 )
CALL OUTPUT(I,N_CASE,X2)
```

N_CASE = 149

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
CALL FM_COS_SIN( (X_VALS(I)) , X1 , X2 )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 150

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
CALL FM_COS_SIN( (X_VALS(I)) , X1 , X2 )
CALL OUTPUT(I,N_CASE,X2)
```

N_CASE = 151

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
CALL FM_ULP( (X_VALS(I)) , X1 )
CALL OUTPUT(I,N_CASE,X1)
```

N_CASE = 152

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
N_CASE = N_CASE + 1
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z3 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = Z2 + Z3
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 154

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
N_CASE = N_CASE + 1
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z3 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = Z2 - Z3
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 156

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
N_CASE = N_CASE + 1
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z3 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = Z2 * Z3
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 158

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
N_CASE = N_CASE + 1
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
```



```

Z3 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = Z2 / Z3
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 160
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
N_CASE = N_CASE + 1
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z3 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = Z2 ** Z3
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 162
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = ABS(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 164
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = ACOS(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 166
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = ACOSH(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 168
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = AINT(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 170
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = ASIN(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 172
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )

```

```

Z1 = ASINH(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 174
CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = ATAN(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 176
CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = ATANH(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 178
CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = CEILING(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 180
CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = CONJG(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 182
CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = COS(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 184
CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = COSH(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))

N_CASE = 186
CALL ARGS(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = DBLE(Z2)
N_CASE = N_CASE + 1

```

```
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 188

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = DIGITS(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 190

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = DINT(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 192

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = ERF(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 194

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = ERFC(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 196

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = ERFC_SCALED(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 198

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = EXP(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

N_CASE = 200

```
CALL ARGSC(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = FACTORIAL(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

```
N_CASE = 202
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = FLOOR(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

```
N_CASE = 204
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = FRACTION(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

```
N_CASE = 206
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = GAMMA(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

```
N_CASE = 208
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = HUGE(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

```
N_CASE = 210
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = INT(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

```
N_CASE = 212
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = LOG(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

```
N_CASE = 214
CALL ARG(S(I,N_CASE,MAX_CASE,N_VALS,X_VALS,RAN,-1001.0,1001.0,J,K)
Z2 = CMPLX( X_VALS(J) , X_VALS(K) )
Z1 = LOG10(Z2)
N_CASE = N_CASE + 1
CALL OUTPUT(I,N_CASE-1,REAL(Z1))
CALL OUTPUT(I,N_CASE,AIMAG(Z1))
```

```
N_CASE = 216
```