Basic Mathematics

BY T. P. JONES, O.L.S.

A sub-routine for computing an angle in double precision from its tangent is listed in Figure 1.

The argument must be ZO#. The computed angle in degrees and decimal degrees will be in ZJ#.

```
10    INPUT ZO#:  GOSUB 40480:  PRINT ZJ#:  GOTO 10
40465 REM
40470 REM     >>> ARC-TANGENT ROUTINE <<<
40475 REM
40480 ZR% = 0:  ZP% = 0:  IF ZO# < 0 THEN ZO# = ZO# * -1:  ZR% = 1
40485 IF ZO# > 1 THEN ZO# = 1 / ZO#:  ZR% = ZR% + 2
40490 ZF# = 1.732050807568877:  IF ZO# <= 0.2679491924311227 THEN 40500
40495 ZR% = ZR% + 4:  ZO# = (ZO# * ZF# - 1) / (ZO# + ZF#)
40500 ZS% = -1:  ZP% = 1:  ZK# = ZO# * ZO#:  ZL# = ZO#:  ZJ# = ZO#
40505 ZL# = ZL# * ZK# * ZS%:  ZP% = ZP% + 2:  ZM# = ZL# / ZP%
40510 IF ZM# <> 0 THEN ZJ# = ZJ# + ZM#:  GOTO 40505
40515 IF ZR% > 3 THEN ZJ# = ZJ# + 0.5235987755982988:  ZR% = ZR% - 4
40520 IF ZR% > 1 THEN ZJ# = 1.570796326794896 - ZJ#:  ZR% = ZR% - 2
40525 IF ZR% <> 0 THEN ZJ# = -ZJ#
40530 ZJ# = ZJ# * 57.29577951308232:  RETURN
```