```
 1: program raiz
 2: implicit real*8(a-h,o-z)
 3: open(15,file="18do02exe1.txt")
 4: TOLX = 1.d-06
 5: X = .1
 6: FOLD = func(X)
 7: DX = .5
 8: ITER = 0
 9: 10 continue
10:    ITER = ITER + 1
11:    X = X + DX
12:    write(15,*)ITER, X
13:    if ((FOLD*func(X)) .LT. 0) then
14:       X = X - DX
15:       DX = DX/2
16:    END IF
17:    if (ABS(DX) .GT. TOLX) GOTO 10
18: STOP
19: end
20:
21: real*8 function func(E)
22: implicit real*8(a-h,o-z)
23: Double Precision Mass
24: parameter(a = 2.0d0, V0 = 10.0d0)
25: parameter(Mass = 1.0d0, h_bar_sq = 7.619968d0)
26: alpha = dsqrt((2.d0*Mass*E)/h_bar_sq)
27: beta = dsqrt((2.d0*Mass*(V0-E))/ h_bar_sq)
28: func = beta*dcos(alpha*a) - alpha*dsin(alpha*a)
29: end
```