BISECTION ALGORITHM

Algorithm 1 A Pseudocode for Biesection Method

INPUT $a, b, M, \delta, \epsilon$
$u \leftarrow f(a)$
$v \leftarrow f(b)$
$e \leftarrow b - a$
OUTPUT a, b, u, v
if $\text{sign}\,(u) = \text{sign}\,(v)$ **then**
  stop
end if
for $1 \leq k \leq M$ **do**
  $e \leftarrow e/2$
  $c \leftarrow a + e$
  $w \leftarrow f(c)$
  OUTPUT k, c, w, e
  if $|e| < \delta$ **or** $|w| < \epsilon$ **then**
    stop
  end if
  if $\text{sign}\,(w) \neq \text{sign}\,(u)$ **then**
    $b \leftarrow c$
    $v \leftarrow w$
  else
    $a \leftarrow c$
    $u \leftarrow w$
  end if
end for