Algorithm 5.11: WIENER'S ALGORITHM(n, b)

$(q_1, \ldots, q_m; r_m) \leftarrow$ EUCLIDEAN ALGORITHM(b, n)
$c_0 \leftarrow 1$
$c_1 \leftarrow q_1$
$d_0 \leftarrow 0$
$d_1 \leftarrow 1$
for $j \leftarrow 2$ **to** m
  do {
    $c_j \leftarrow q_j c_{j-1} + c_{j-2}$
    $d_j \leftarrow q_j d_{j-1} + d_{j-2}$
    $n' \leftarrow (d_j b - 1)/c_j$
    comment: $n' = \phi(n)$ if c_j/d_j is the correct convergent
    if n' is an integer
      then {
        let p and q be the roots of the equation
          $x^2 - (n - n' + 1)x + n = 0$
        if p and q are positive integers less than n
          then return (p, q)
      }
  }
return ("failure")