Algorithm 1 Mandelbrot set

Require: $c_x, c_y, \Sigma_{\max} \in \mathbb{R}, \quad i \in \mathbb{N}, \quad i_{\max} > 0, \quad \Sigma_{\max} > 0$

1: **function** MANDELBROT($c_x, c_y, i_{\max}, \Sigma_{\max}$)
2: **local variables:** x, y, x', y', i, Σ
3: $x, y, i, \Sigma \leftarrow 0$ ▷ initial zero value for all
4: **while** $\Sigma \leq \Sigma_{\max}$ and $i < i_{\max}$ **do**
5: $x' \leftarrow x^2 - y^2 + c_x$
6: $y' \leftarrow 2xy + c_y$
7: $m \leftarrow x'$
8: $y \leftarrow y'$
9: $\Sigma \leftarrow x^2 + y^2$
10: **end while**
11: **if** $i < i_{\max}$ **then**
12: **return** i
13: **end if**
14: **return** 0
15: **end function**