

Midpoint Circle Drawing Algorithm

Step 1: Start

Step 2: Declare variables x_0, y_0, p, r, x_c, y_c

Step 3: Read the value r, x_c, y_c

Step 4: Initialize $x_0 = 0, y_0 = 0$

Step 5: Calculate the initial decision parameter $= \frac{5}{4} - r$

Step 6: Repeat until $y \geq x$

a. If $P_k < 0, x_{k+1} = x_k + 1$

$$y_{k+1} = y_k$$

$$P_k = P_k + 2x_{k+1} + 1$$

Else if $P_k \geq 0$

$$x_{k+1} = x_k$$

$$y_{k+1} = y_k - 1$$

$$P_k = P_k + 2x_{k+1} + 1 - 2y_{k+1}$$

b. Determine the symmetry in other 7 octants.

c. $x = x + x_c, y = y + y_c$

Step 7: Stop