

Mid Point Circle Algorithm Example^{mot}

① Draw a circle having centre at $(0,0)$ & radius 10.

We know, if r is integer then,

$$P_0 = 1 - r = 1 - 10 = -9$$

and

at initial position $x_0 = 0$ & $y_0 = r$.

$$\text{So, } x_0 = 0 \text{ & } y_0 = 10.$$

Condition,

i) if $P < 0$ then $P_{k+1} = P_k + 2x_{k+1} + 1$ & (x_{k+1}, y_k)

ii) if $P \geq 0$ then $P_{k+1} = P_k + 2x_{k+1} + 1 - 2y_{k+1}$ & (x_{k+1}, y_{k+1})

k	P_k	x_{k+1}, y_{k+1}	$2x_{k+1}$	$2y_{k+1}$
0	-9	1, 10	2	20
1	-6	2, 10	4	20
2	-1	3, 10	6	20
3	6	4, 9	8	18
4	-3	5, 9	10	18
5	8	6, 8	12	16
6	5	7, 7	14	14