CS402: Computer Graphics

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Circle Drawing Algorithms

1 Draw a circle from (0,0) with a radius equal to 10

$$p_0 = 1 - r = 1 - 10 = -9$$

if $p_k < 0$: (x_{k+1}, y_k)

$$p_{k+1} = p_k + 2x_{k+1} + 1$$

$$p_1 = -9 + 2 + 1 = -6$$

$$p_2 = -6 + 4 + 1 = -1$$

$$p_3 = -1 + 6 + 1 = 6$$

$$p_5 = -3 + 10 + 1 = 8$$

else: (x_{k+1}, y_{k-1})

$$p_{k+1} = p_k + 2x_{k+1} + 1 - 2y_{k+1}$$

$$p_4 = 6 + 8 + 1 - 18 = -3$$

$$p_6 = 8 + 12 + 1 - 16 = 5$$

(0,10)

k	p_k	plot	$2x_{k+1}$	$2y_{k+1}$
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)