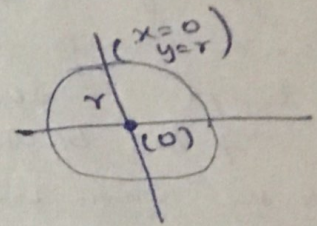


Bresenham's Circle Drawing Algorithm

Algorithm

1. Input center of circle (x_c, y_c) & radius r .
2. Initial value $x=0, y=r$.
- 3) Plot pixel $(x+x_c, y+y_c)$
- 4) Decision parameter $P = 3 - 2r$.
- 5) while $(x \leq y)$.



to avoid floaty point
no in more
precise way

if $P < 0$
then $x = x + 1$
 $y = \text{no change}$
 $P = P + 4x + 6$

Plot pixel $(x+x_c, y+y_c)$

Else

$x = x + 1$
 $y = y - 1$

$P = P + 4(x - y) + 10$

Plot pixel $(x+x_c, y+y_c)$

End if
End while

$P > 0$

$P > 0$

$P > 0$

$P > 0$

$P > 0$

$P > 0$

Q $(x_c, y_c) = (30, 40)$ and $r = 8$.

	x	y	P	$(x+x_c, y+y_c)$
$(0, r)$	0	8	$P = 3 - 2x = 3 - 16 = -13$	$(30, 48)$
$P < 0$	1	8	$P = P + 4x + 6$ $= -13 + 4 \times 1 + 6$ $= -13 + 4 + 6 = 10 - 13$ $= -3$	$(31, 48)$
$P < 0$	2	8	$P = -3 + 4 \times 2 + 6$ $= -3 + 8 + 6 = 11$	$(32, 48)$
$P > 0$	3	7	$P = P + 4(x - y) + 10$ $= 11 + 4(3 - 7) + 10$ $= 11 + 4(-4) + 10$ $= 11 - 16 + 10 = 5$	$(33, 47)$
$P > 0$	4	6	$P + 4(x - y) + 10$ $5 + 4(-2) + 10$ $5 - 8 + 10 = 7$	$(34, 46)$
$P > 0$	5	5		<u>$(35, 45)$</u>
	<u><u>break</u></u>			