

8/3

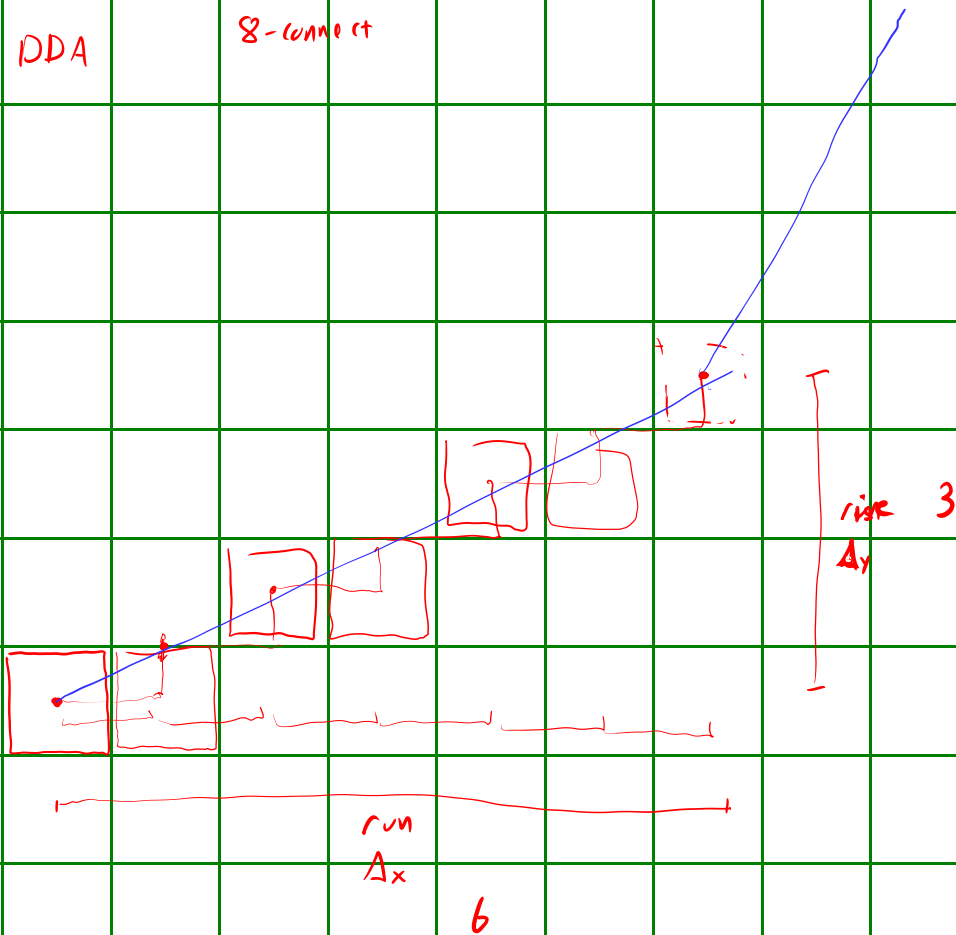


DDA

8-connect

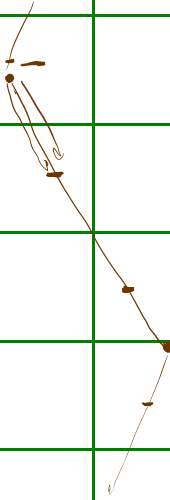
$$\frac{3}{6} = \frac{1}{2}$$

$$y = 10$$



rise or run

Maybe swap pts



$(7.8, 1.7)$
 $+1.18$
 $+3$

$(8.2, 2)$
 $(7.98, 2)$
 $(8.58, 3)$

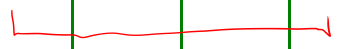
$(9.18, 4)$

$(9.78, 5)$

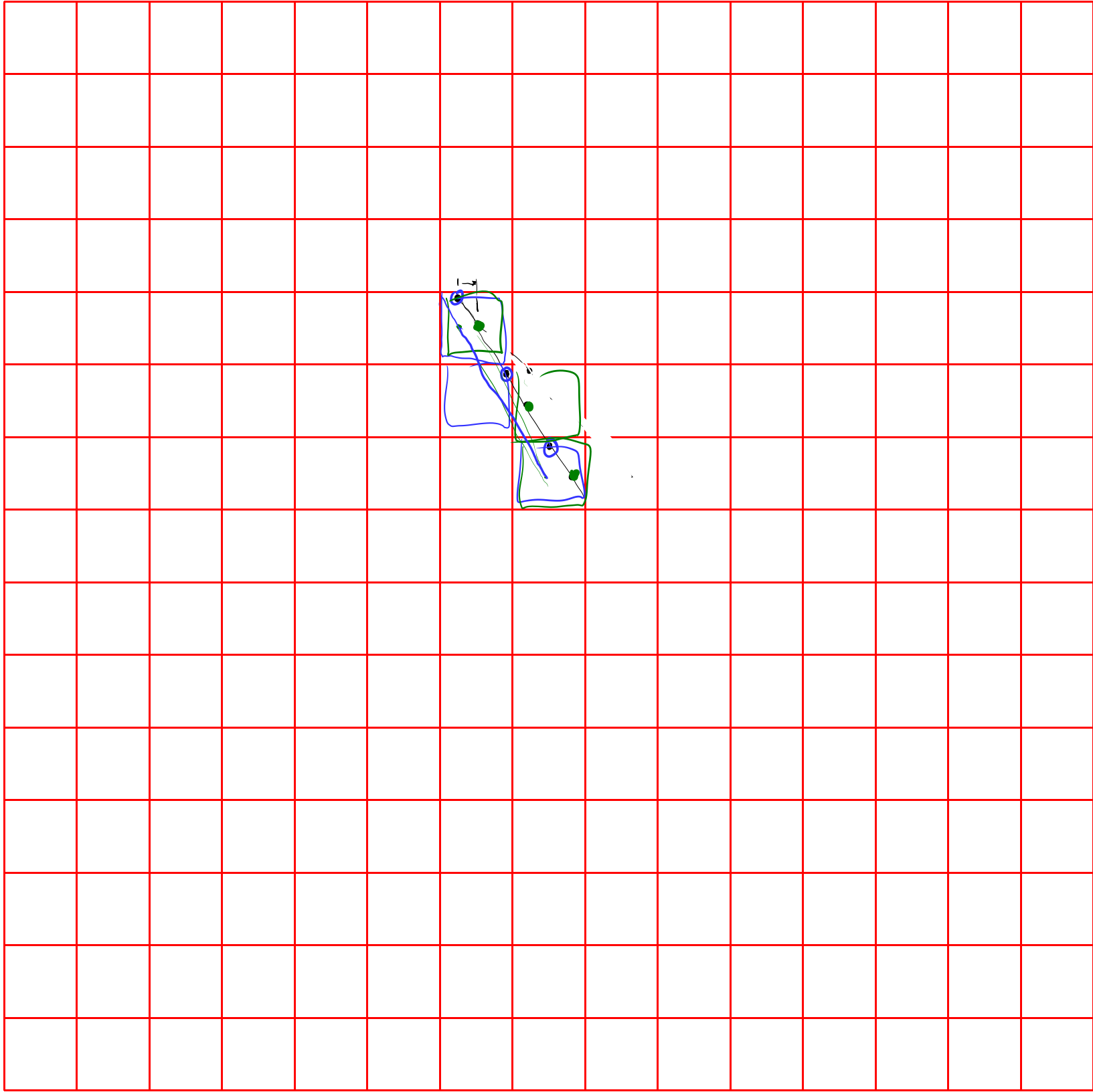
0.6

$$\frac{3.3}{5.5} = \frac{3}{5} = 0.6$$

5.5



3.3



finite # of bits

digits
.

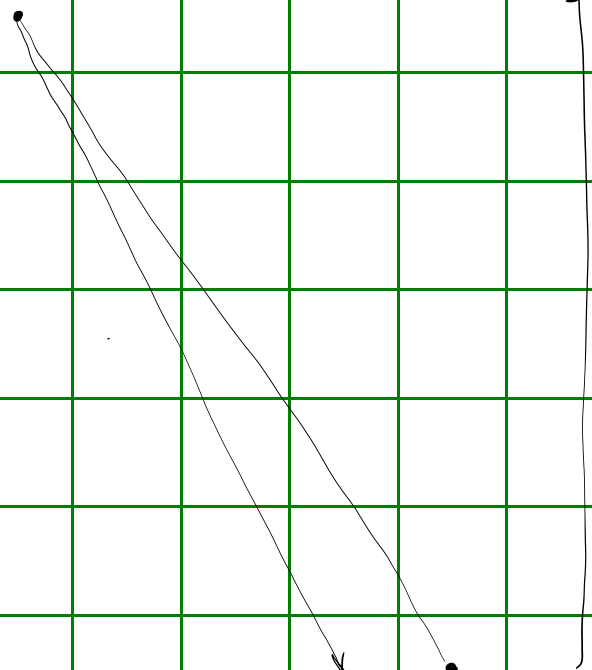
5 9.3 9.6 9.9

$\frac{1}{3}$

0.3

6

4



Bresenham

$$\text{num} = \frac{\Delta x}{2}$$

$$x += 1$$

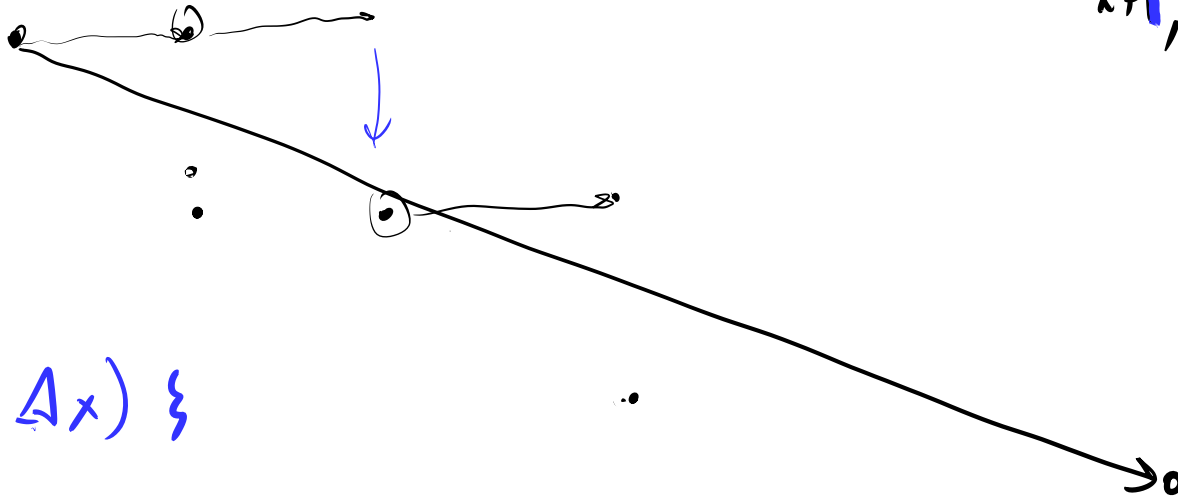
$$\text{num} += \Delta y$$

if (num > Δx) {

$$y += 1$$

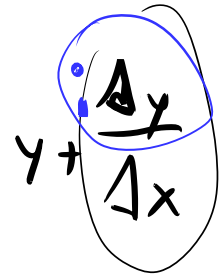
$$\text{num} -= \Delta x$$

}



x, y

$x+i,$



num current

$\Delta y > \Delta x ?$

Mixed numbers

$$\frac{3}{8}$$

$$\frac{17}{8}$$

$$2\frac{1}{8}$$

$$2 + \frac{1}{8}$$

size	y	int y	num
0	$2\frac{0}{8}$	2	6 $\rightarrow +3$
1	$2\frac{3}{8}$	2	3 $\rightarrow +3$
2	$2\frac{6}{8}$	2	6 $\rightarrow +3$
3	$3\frac{1}{8}$	3	1 $\rightarrow +3 -8$
4	$3\frac{4}{8}$	3	4
5	$3\frac{7}{8}$	3	7 \rightarrow
6	$4\frac{2}{8}$	4	2 \rightarrow

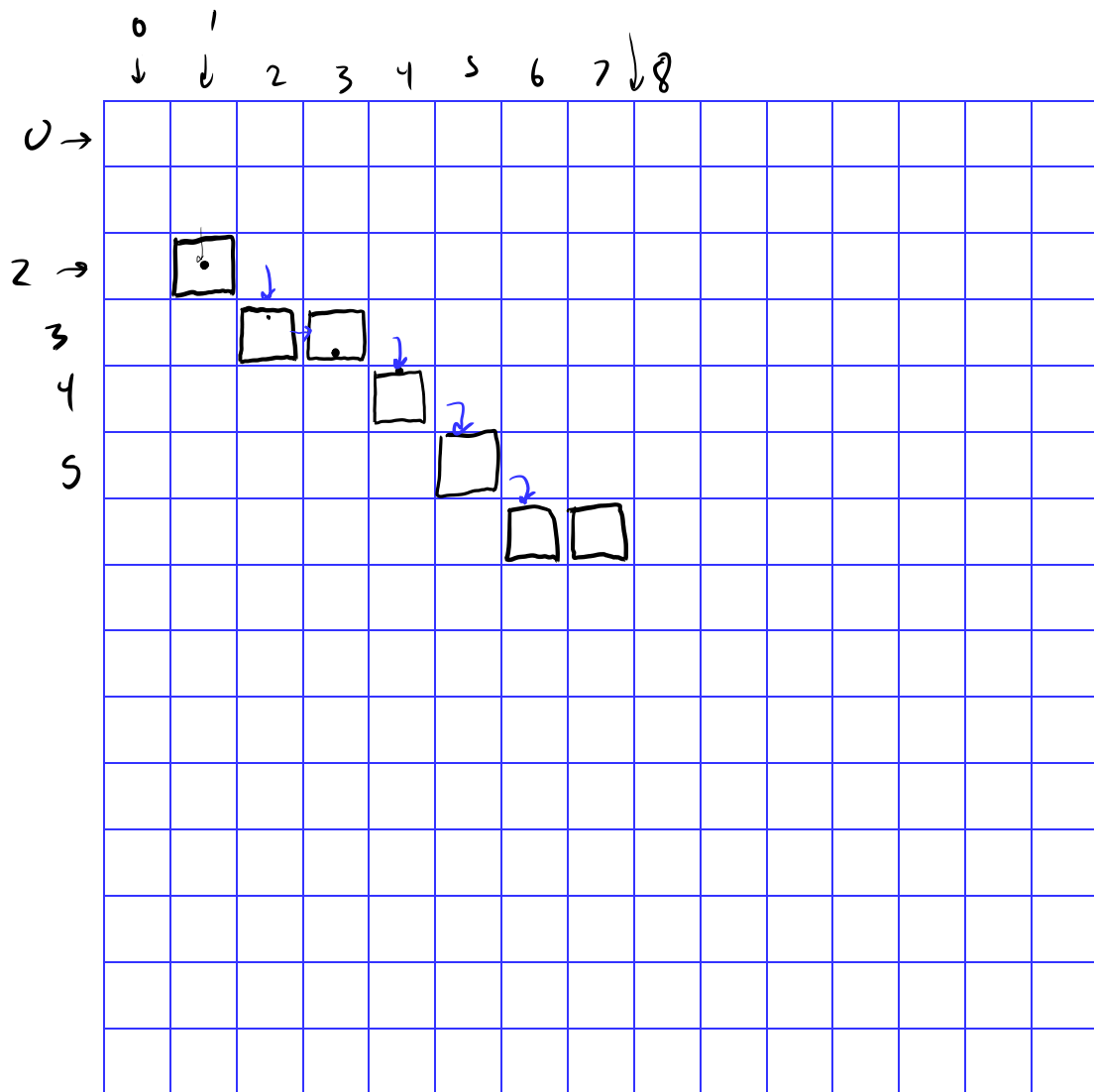
$9 \geq 8$
 $10 \geq 8$
 $y += 1$
 $n -= 8$

$$\text{round}(x) = \lfloor x + \frac{1}{2} \rfloor$$

(1, 2)
(8, 7)

$\Delta x = 7$
 $\Delta y = 5$

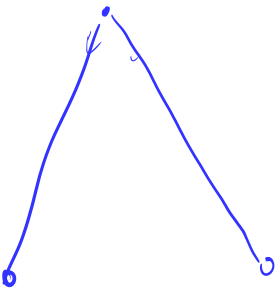
$y = \frac{5}{7}$



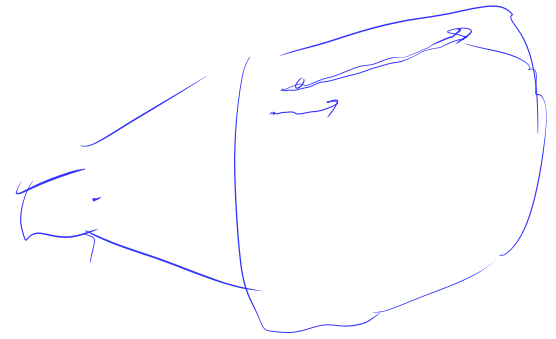
y
 2
 $2\frac{5}{7}$
 $2\frac{10}{7} = 3\frac{3}{7}$
 $3\frac{8}{7} = 4\frac{1}{7}$
 $4\frac{6}{7}$
 $4\frac{11}{7} = 5\frac{4}{7}$
 $5\frac{9}{7} = 6\frac{2}{7}$

y
 $2\frac{7}{14}$ (7)
 $17 > 14$ (3)
 $13 < 14$ (13) > 14 (9)
 (5)
 (1)
 (11)

Scanline



horizontal? ignore



edges in y — include small in y
scanlines in x → $[y_{min}, y_{max})$
→ $[x_{min}, x_{max})$

1 = full

0 = black

linear
interpolation

(lerp)

red
•
(x, y, r, g, b)
(2.4, 3.1, 255, 0, 0)

(1, $\frac{3.3}{6.4}$, $\frac{255 \cdot 3.3}{6.4}$, 0, 0)

Δx 6.9 ←
 Δy 3.3
 Δr 255 -36
 Δg 0 -37
 Δb 0
-
-
-

black
•
(x, y, r, g, b)
(9.3, 6.4, 0, 0, 0)