No
Date

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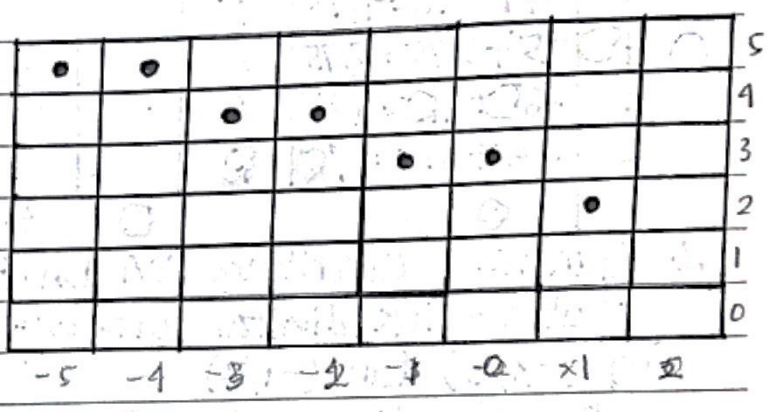
"Praktikum 1 Grafika Komputer"

1. Tentukan koordinat titik-titik digital untuk garis yang dibentuk oleh dua titik sebagai berikut :

a.) (-5,5) dan (1,2)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2-5}{1-(-5)} = \frac{-3}{6} = -0{,}5$$

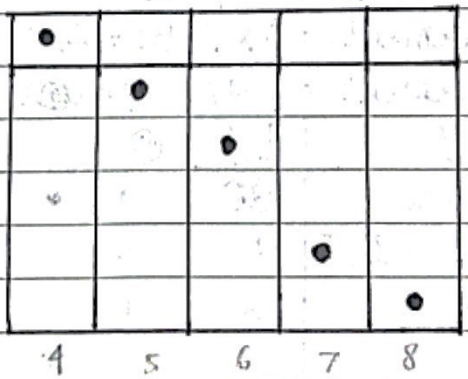
x	y	[y]
-5	5.00	5
-4	5+(-0,5)=4,5	5
-3	4,5+(-0,5)=4	4
-2	4+(-0,5)=3,5	4
-1	3,5+(-0,5)=3	3
0	3+(-0,5)=2,5	3
1	2,5+(-0,5)=2	2



b.) (4,3) dan (8,-2)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2-3}{8-4} = \frac{-5}{4} = -1{,}25$$

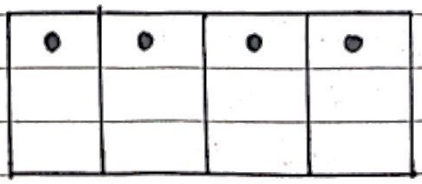
x	y	[y]
4	3.00	3
5	3+(-1,25)=1,75	2
6	1,75+(-1,25)=0,5	1
7	0,5+(-1,25)=-0,75	-1
8	-0,75+(-1,25)=-2	-2



c.) (2,3) dan (5,3)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3-3}{5-2} = \frac{0}{3} = 0$$

x	y	[y]
2	3.00	3
3	3 + 0 = 3	3
4	3 + 0 = 3	3
5	3 + 0 = 3	3



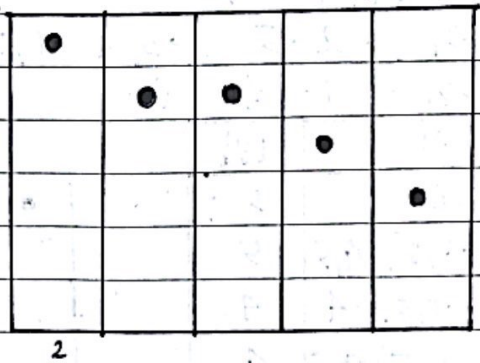
d.) (2,3) dan (2,5)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5-3}{2-2} = \frac{2}{0}$ = Tidak ditemukan titik koordinat

e.) (6,4) dan (2,1)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1-4}{2-6} = \frac{-3}{-4} = 0,75$

x	y	[y]
6	4.00	4
5	4+0,75=4,75	5
4	4,75+0,75=5,50	6
3	5,50+0,75=6,25	6
2	6,25+0,75=7	7



2. Gunakan algoritma DDA dan Bresenham untuk menentukan titik-titik digital antara :

a.) (-3,3) dan (-1,3)

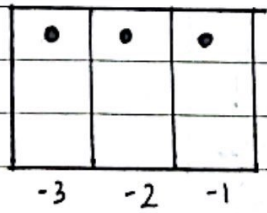
$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3-3}{-1-(-3)} = \frac{0}{2} = 0$

DDA = $\Delta x > \Delta y$ maka step = 2

x_Increment = Δx / step = 2/2 = 1

y_Increment = Δy / step = 0/2 = 0

x	y	[y]
-3	3.00	3
-2	3+0 = 3	3
-1	3+0 = 3	3



Bresenham = $m = \frac{0}{2} = 0$

$p < 0$ $\quad \Delta x = -1-(-3) = 2$

$p = p + d_1$ $\quad \Delta y = 3-3 = 0$

$y = y$ $\quad d_1 = 2 \cdot \Delta y = 0$

$x = x+1$ $\quad d_2 = 2 \cdot \Delta x - \Delta y = 4$

$p = d_1 - \Delta x = 0 - 2 = -2$

p	x	y	
-2	-3	3	2> maka.
-2	-2	3	tabel koordinat
-2	-1	3	-nya sama

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b.) (7, -1) dan (-4, -6)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-6-(-1)}{-4-7} = \frac{-5}{-11} = 0{,}45$

DDA = $\Delta y > \Delta x$ maka step = $\Delta y = -5$

x_increment = Δx / step = $-11/-5 = 2{,}2$

y_increment = Δy / step = $-5/-5 = 1$

x	y	[y]	
7	-1.00	-1	
7+2,2 = 9,2	-1+1 = 0	0	
9,2+2,2 = 11,4	0+1 = 1	1	
11,4+2,2 = 13,6	1+1 = 2	2	= Tidak ditemukan titik koordinatnya karena penjumlahannya semakin besar.

c.) (-3, 3) dan (-1, -3)

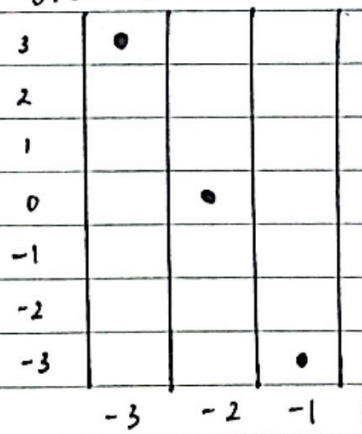
$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3-3}{-1-(-3)} = \frac{-6}{2} = -3$

DDA: $\Delta x > \Delta y$ maka step = $\Delta x = 2$

x_increment = Δx / step = $2/2 = 1$

y_increment = Δy / step = $-6/2 = -3$

x	y	[y]
-3	3.00	3
-2	3+(-3) = 0	0
-1	0+(-3) = -3	-3



Bresenham = $m = \frac{-6}{2} = -3$

$\Delta x = -1-(-3) = 2$

$\Delta y = -3-3 = -6$

$2\Delta y - 2\Delta x = 2(-6) - 2(2) = -16$

$pk = 2\Delta y - \Delta x = 2(-6) - 2 = -14$

If $pk < 0$ (x_{k+1}, y_k) else (x_{k+1}, y_{k+1})

$A < 0 = 2\Delta y = -12$

$B > 0 = 2\Delta y - 2\Delta x = -16$

$d_1 = 2 \cdot \Delta y = -12$

$d_2 = 2 \cdot \Delta x - \Delta y = 16$

$p = d_1 - \Delta x = -12 - 2 = -14$

p	x	y	p<0
-14	-3	3	
-26	-2	3	
-38	-1	3	

2 hasil sama dengan DDA maka tabel koordinat yg sama