Quiz 01 Solution:

$y = 4x + 12$

At y-axis:

$y = 4(0) + 12$

$y = 12$

Start $(0, 12)$

At x-axis:

$0 = 4x + 12$

$-12 = 4x$

$x = -3$

End $(-3, 0)$

$dx = -3 - 0 = -3$ //

$dy = 0 - 12 = -12$ //

$|dy| > |dx|$

$dx < 0$

$dy < 0$

Zone 5

Zone 5	Zone 0
$(-y, -x)$	(x, y)
$(0, 12)$	$(-12, 0)$ New Start
$(-3, 0)$	$(0, 3)$ New End

MPL → $dx = 0 - (-12) = 12$

$dy = 3 - 0 = 3$

$dinit = 2dy - dx$

$= 2(3) - 12$

$= -6$

$dNE = 2dy - 2dx$

$= 2(3) - 2(12)$

$= 6 - 24$

$= -18$

$dE = 2dy$

$= 6$ //

x	y	d	NE/E	d updating	Zone 5
-12	0	-6	E	-6+6 = 0	(0, 12)
-11	0	0	E	0+6 = 6	(0, 11)
-10	0	6	NE	6-18 = -12	(0, 10)
-9	1	-12	E	-12+6 = -6	(-1, 9)
-8	1	-6	E	-6+6 = 0	(-1, 8)
-7	1	0	—	—	(-1, 7)

DDA

Start $(-3, 0)$ End $(0, 12)$

$$m = \frac{12-0}{0-(-3)} = \frac{12}{3} = 4$$

$m > 1$ $\qquad \frac{1}{m} = \frac{1}{4} = 0.25$

$x\ (+\frac{1}{m})$	$y\ (+1)$	x (rounded)	Pixel
-3	0	-3	$(-3, 0)$
-2.75	1	-3	$(-3, 1)$
-2.5	2	-3	$(-3, 2)$
-2.25	3	-2	$(-2, 3)$
-2	4	-2	$(-2, 4)$
-1.75	5	-2	$(-2, 5)$

Significance of 8 Way Symmetry

↳ Converts all zones → Zone 0

↳ Allows MPL to work on any zone hence.