Quiz - 02

(1) $x_{min} = 150$, $x_{max} = 700$

$y_{min} = 300$, $y_{max} = 500$

line segment, $y = -0.4x + 250$

the range of x $\in [100, 250]$

$y_1 = -0.4 \times 100 + 250 = 210$

$(x_1, y_1) = (100, 210)$

$y_2 = -0.4 \times 250 + 250 = 150$

$(x_2, y_2) = (250, 150)$

$D = (x_2 - x_1, y_2 - y_1) = (250 - 100, 150 - 210)$

$= (150, -60)$

Initially, $t_E = 0$, $t_L = 1$

Boundary	N_i	$N_i . D$	t	PE/PL	t_E	t_L
Left	(-1,0)	-150	0.33	PE	0.33	1
Right	(1,0)	150	1	PL	0.33	1
Bottom	(0,-1)	60	-1.5	PL	0.33	-1.5
Top	(0,1)	-60	-4.83	PE	0.33	-1.5

Here, $t_E > t_L$, the line is outside the clip window.

(2) $x_{min} = -40$

$y_{min} = -20$

$x_{max} = 20$

$y_{max} = 30$

line segment P1 (-10, -50)

P2 (15, 25)

		ABRL
(A)	OC1	0100
	OC2	0000

OC1 AND OC2 == 0000

The line is partially inside the clipping window.

(B) OC1 != 0000

OC1 has bottom bit.

Applying bottom intersection:

$y_1 = y_{min} = -20$

$x_1 = x_1 + \frac{1}{m}(y_{min} - y_1)$

$= -10 + \frac{1}{3}(-20 + 50)$

$= 0$

$P_1' = (0, -20)$

OC1 = 0000 [recalculating]

Now, OC1 == OC2 == 0000

The clipped segment is (0, -20) to (15, 25)

(3) $x_{min} = 120$, $y_{min} = 200$, $z_{min} = 75$

$x_{max} = 450$, $y_{max} = 600$, $z_{max} = 350$

(a) (100, 250, 150)

F N A B R L

0 0 0 0 0 1

(b) (400, 700, 250)

F N A B R L

0 0 1 0 0 0

(c) (180, 190, 50)

F N A B R L

0 0 0 1 0 0

(d) (500, 450, 375)

F N A B R L

1 0 0 0 1 0