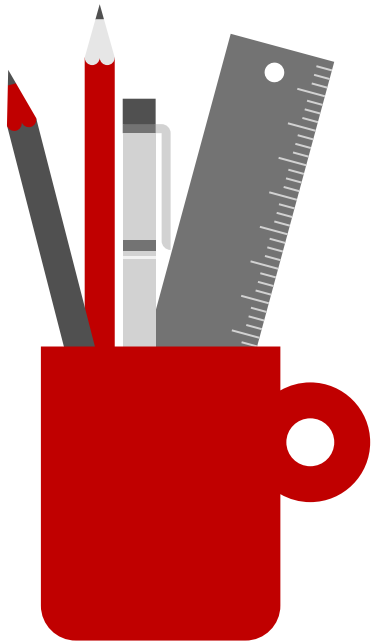

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Linear graphs and their Application

Ordered Pair مرتب جوڑا

An ordered pair of real numbers x and y is a pair (x, y) in which elements are written in specific order.

i.e (i) (x, y) is an ordered pair. in which x is first element and y is second element. such that $(x, y) \neq (y, x)$

R C R C
$(\underline{4}, \underline{3})$, $(\underline{3}, \underline{4})$

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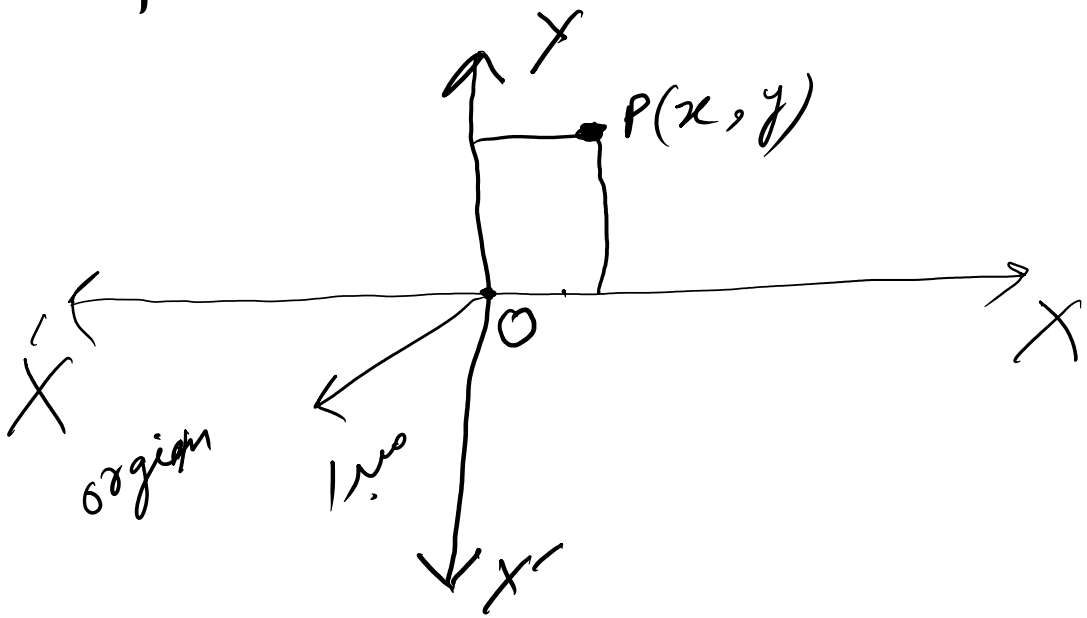
Cartesian Plane کارتیسی مستوی

A Cartesian Plan establishes one to one correspondence between the Set of ordered Pair

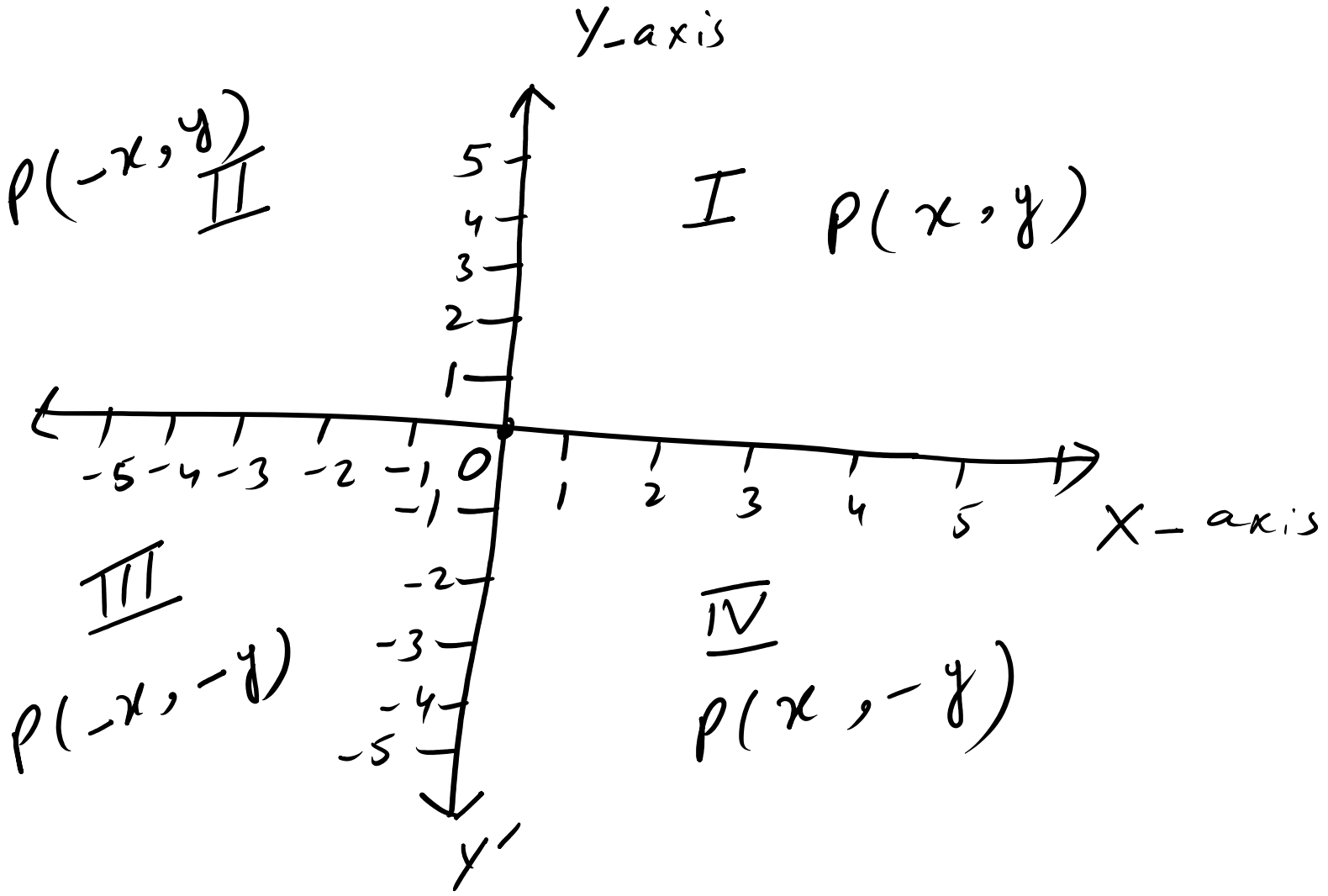
$$R \times R = \{(x, y) \mid x, y \in R\}$$

and the Points of the the cartesian plane.



$YOY' = Y\text{-axis}$

$XOX' = X\text{-axis}$



Ex. 8.1

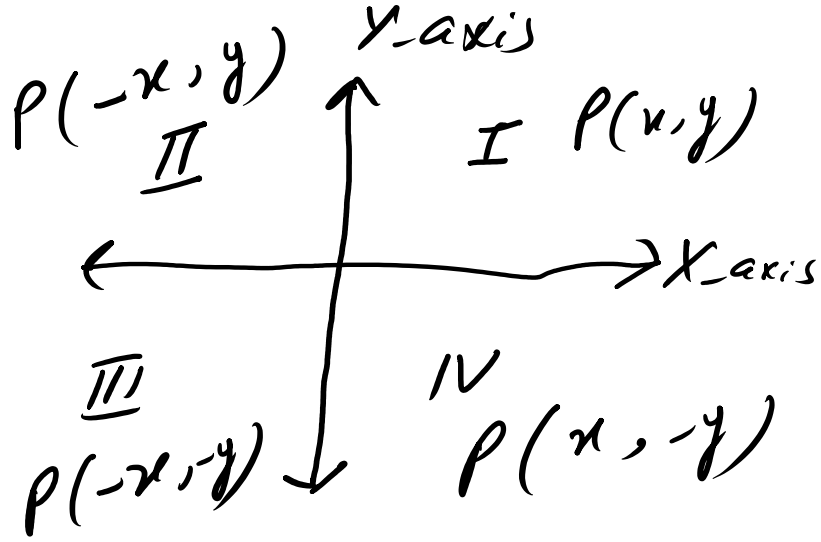
1- Determine the quadrant of the co-ordinate plane in which the following pairs lie.

$P(-4, 3)$ II quadrant

$Q(-5, -2)$ III quadrant

$R(2, 2)$ I quadrant

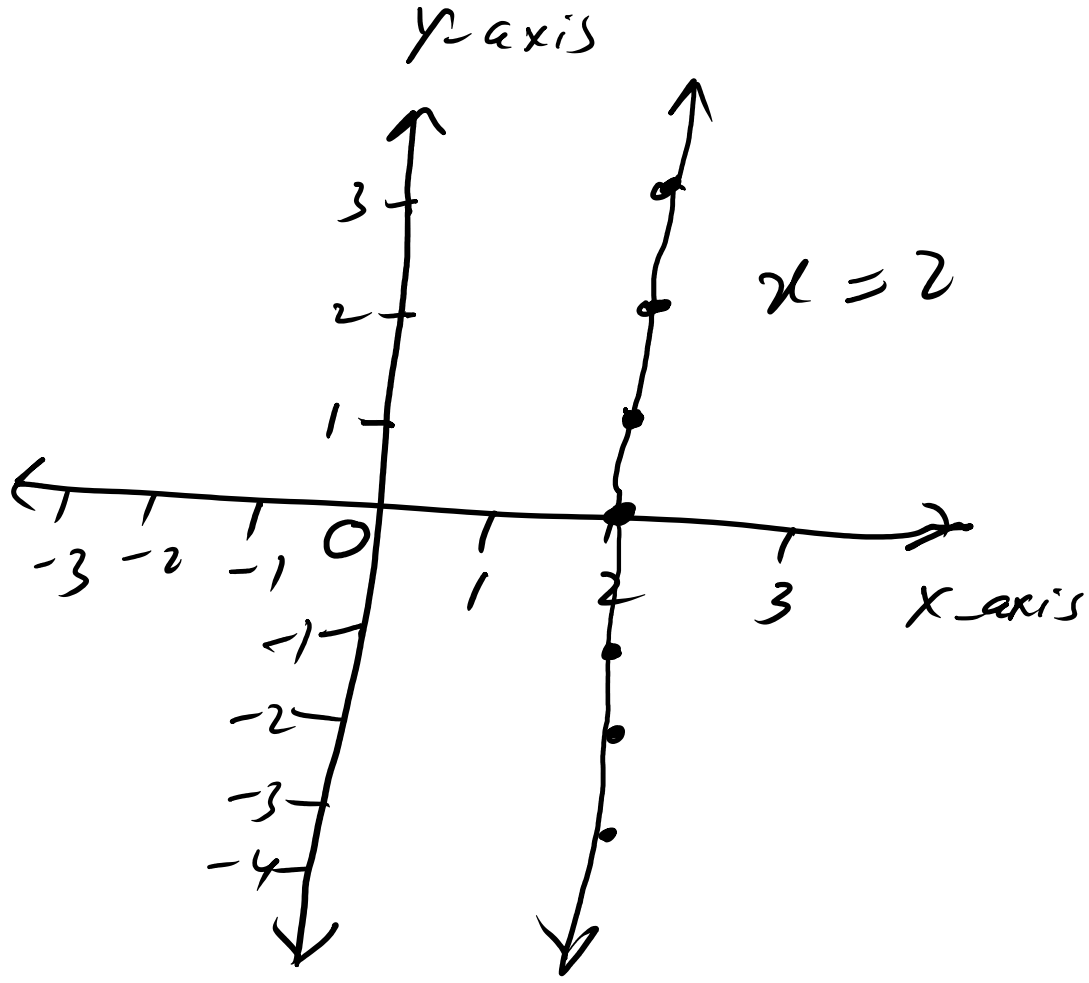
$S(2, -6)$ IV quadrant



② Draw the graph of the following

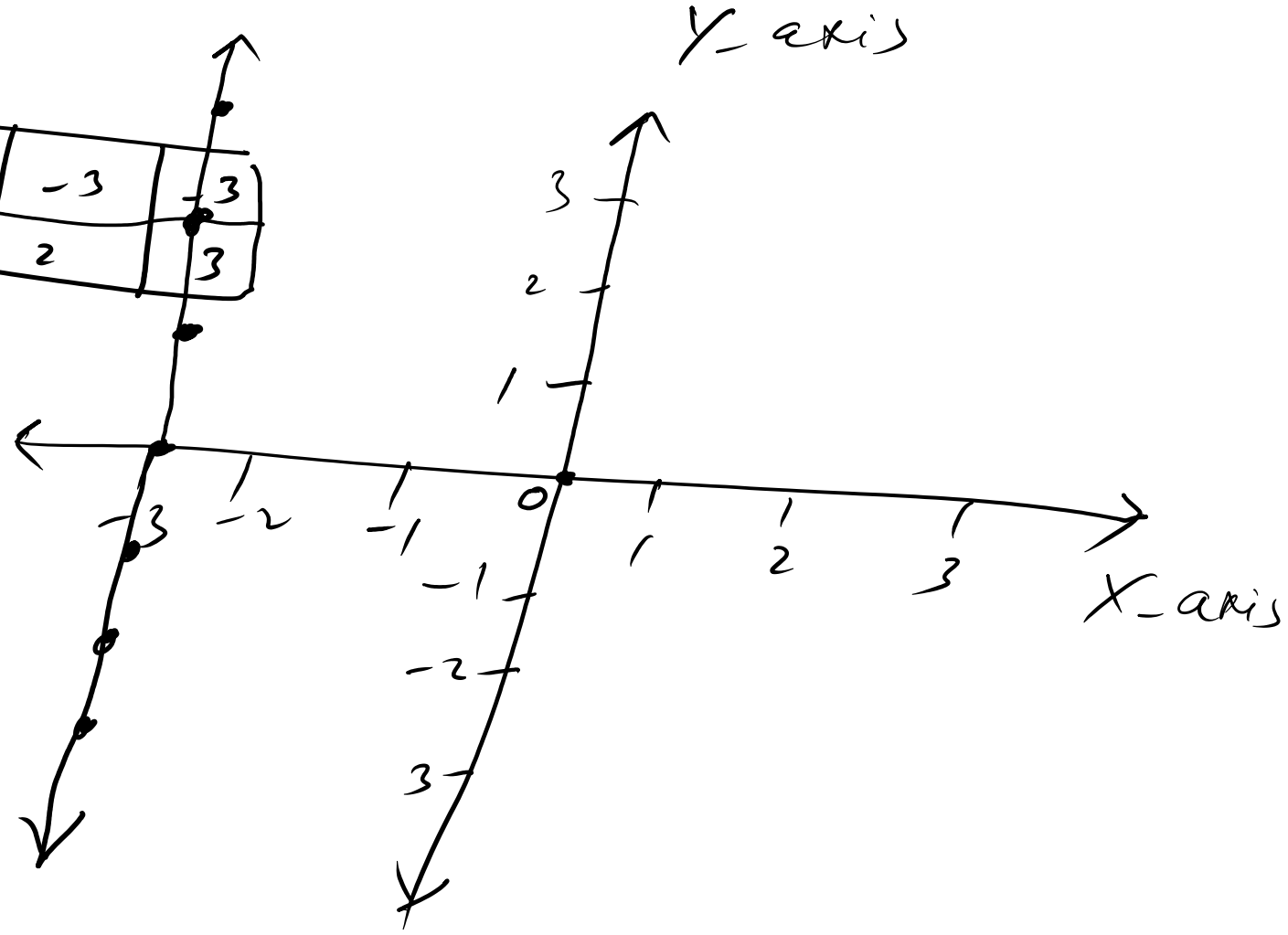
① $x = 2$

x	2	2	2	2	2	2	2
y	-3	-2	-1	0	1	2	3



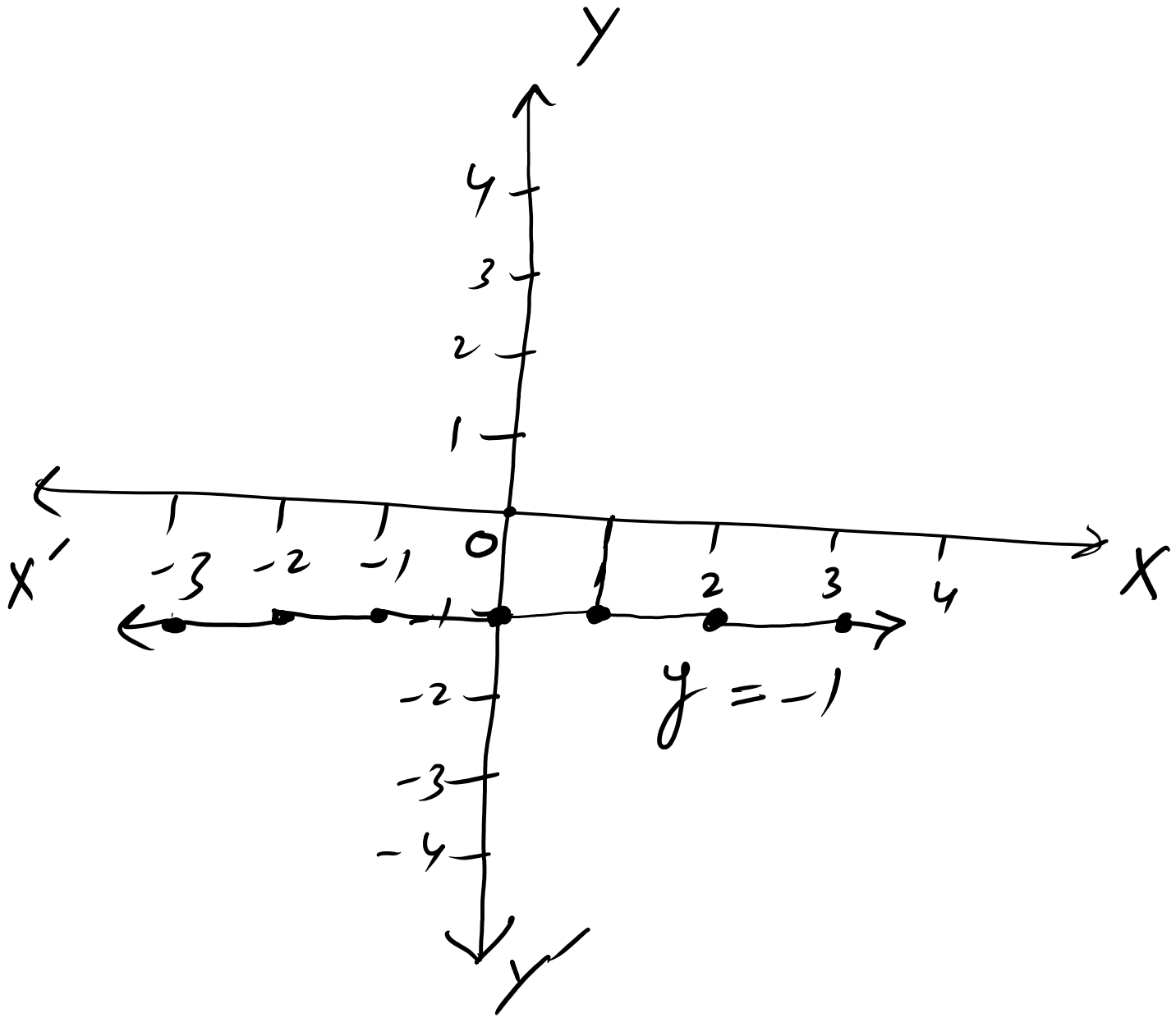
ii) $x = -3$

x	-3	-3	-3	-3	-3	-3	-3
y	-3	-2	-1	0	1	2	3

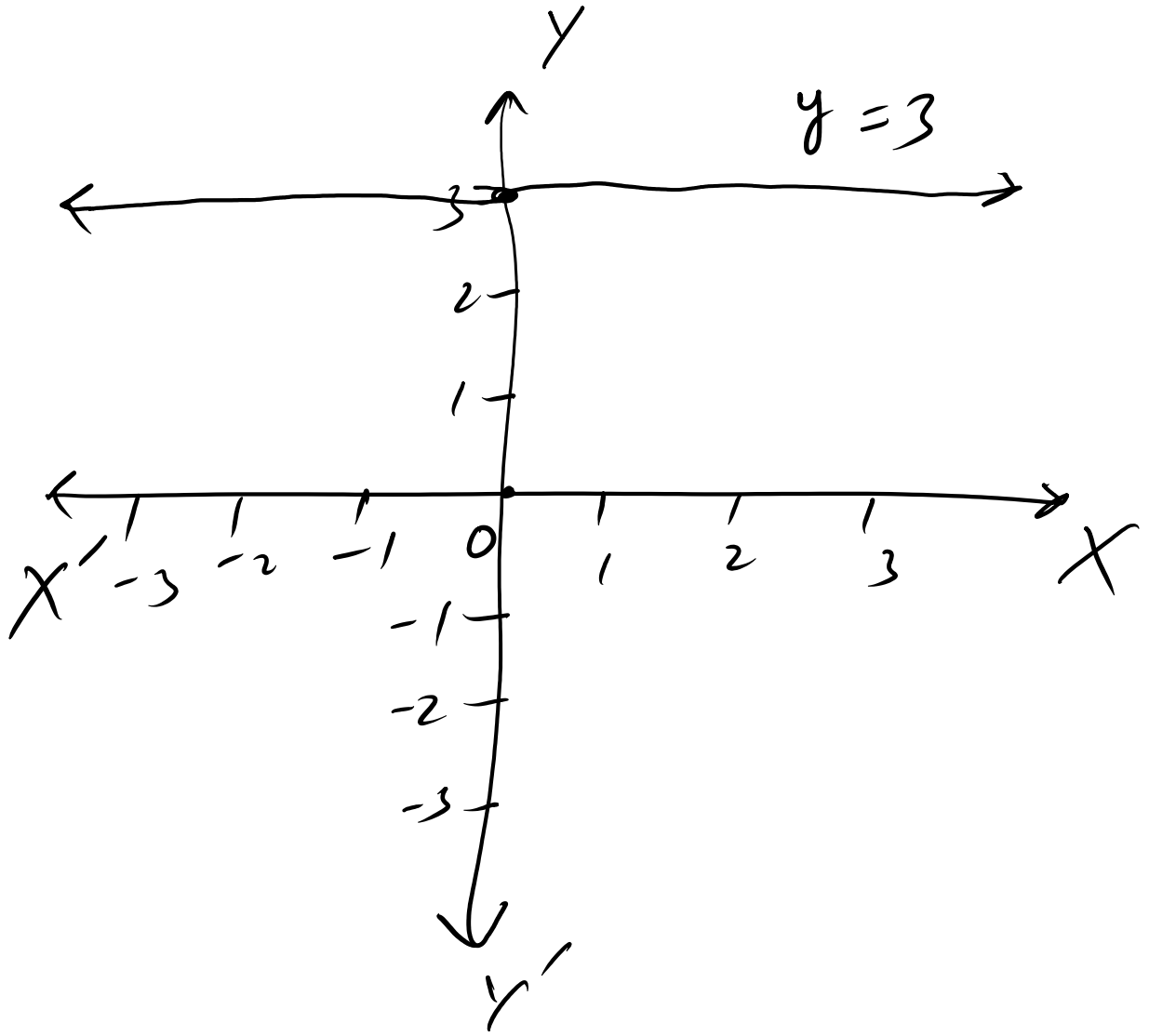


iii) $y = -1$

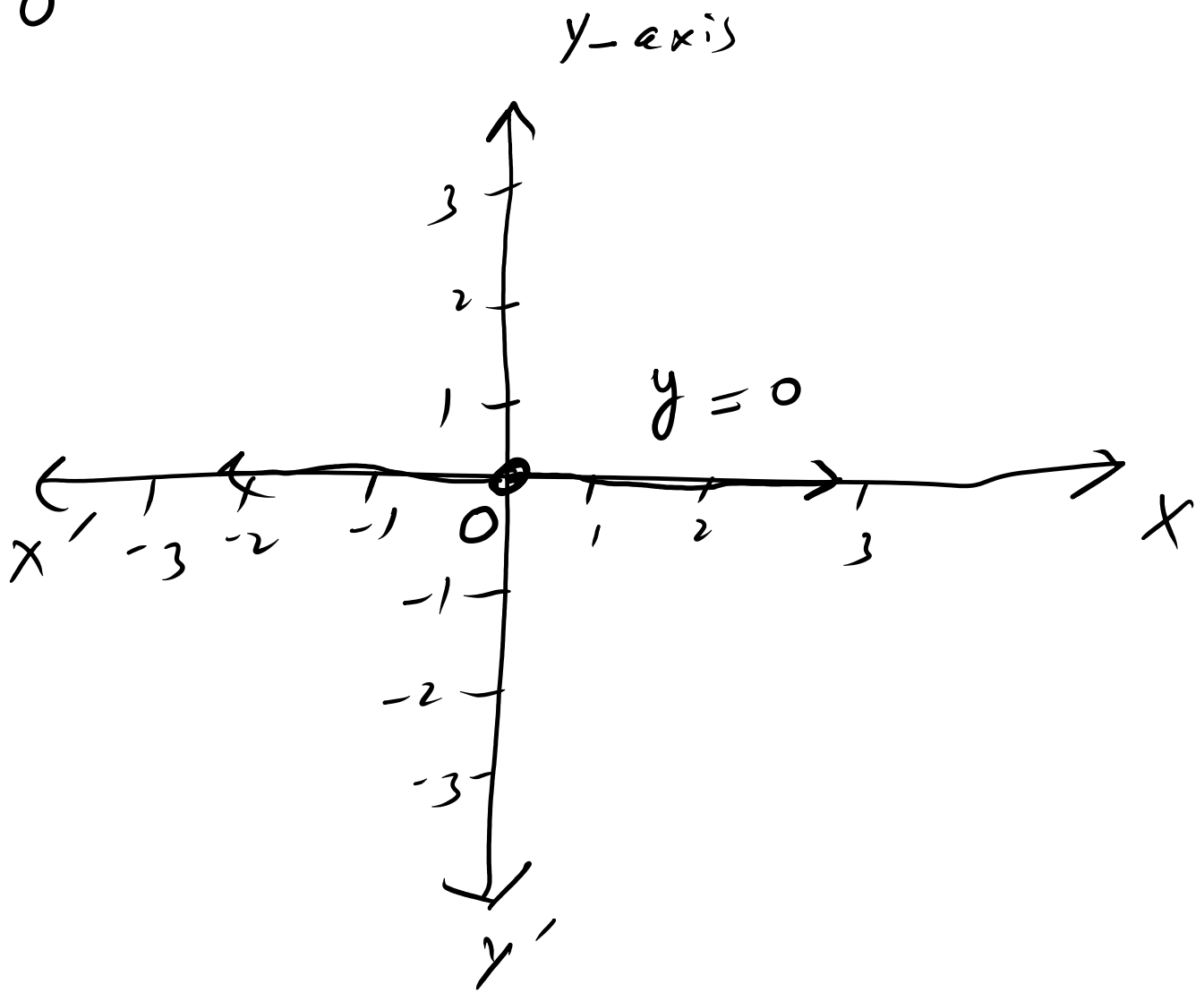
x	-3	-2	-1	0	1	2	3
y	-1	-1	-1	-1	-1	-1	-1



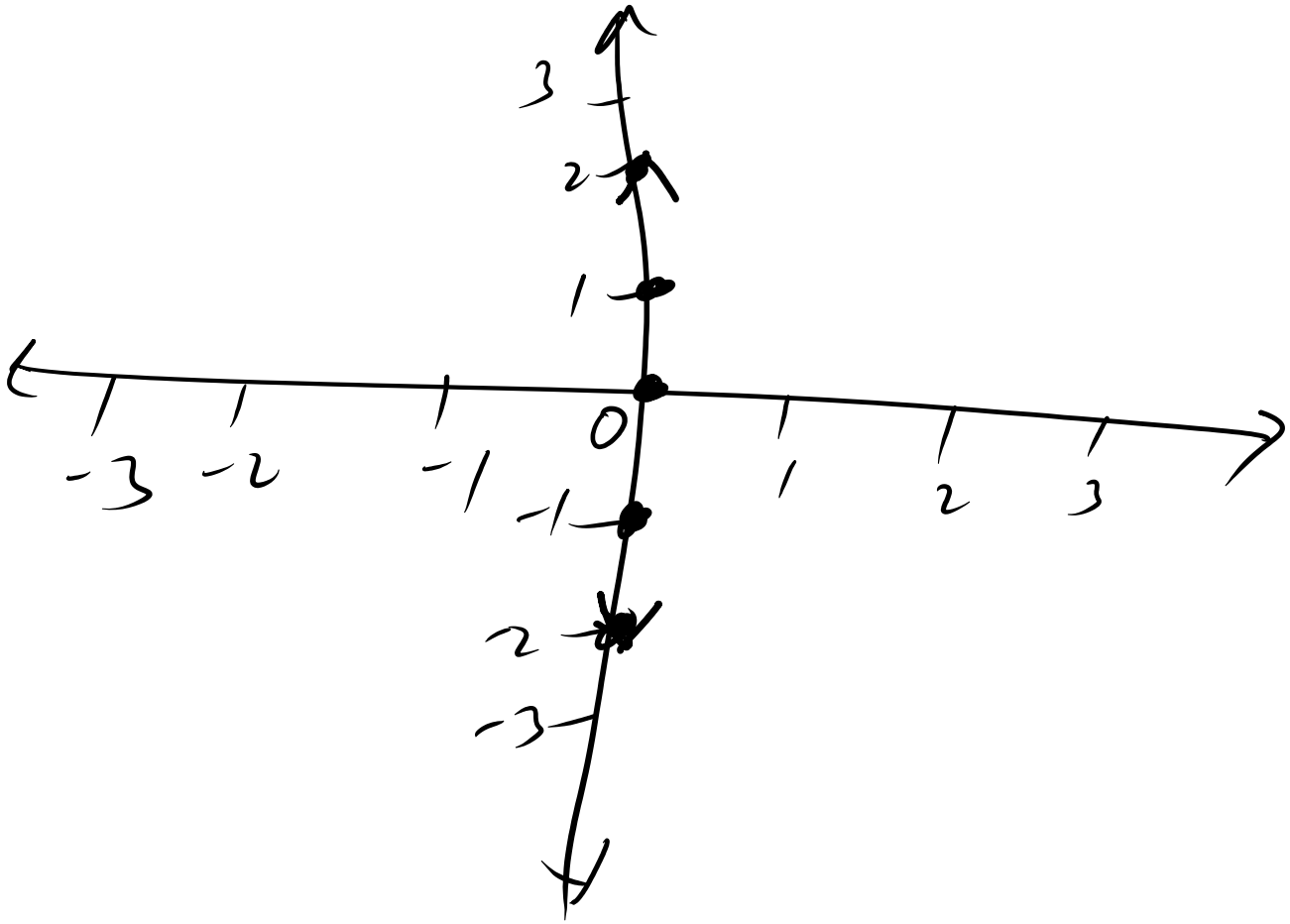
iv) $y = 3$



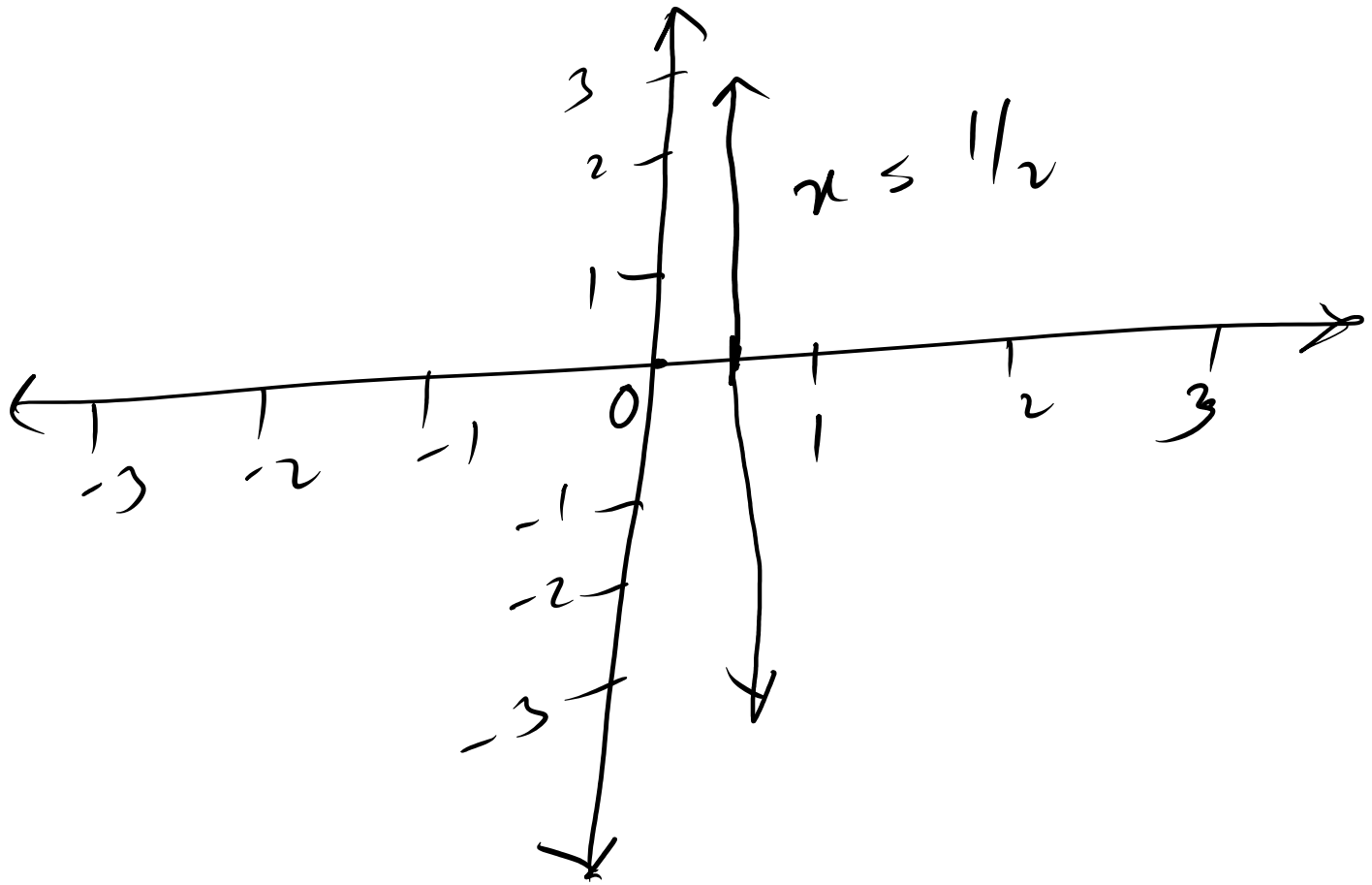
v) $y = 0$



vi) $x = 0$



iv) $x = \frac{1}{2}$



3) Are the following lines (i) Parallel to x-axis (ii) Parallel to y-axis

$y = mx + c$

(i) $2x - 1 = 3$

Parallel to y-axis

(ii)

ii) $x+2 = -1 \Longrightarrow$ Parallel to y-axis

iii) $2x+3 = 2 \Longrightarrow$ Parallel to y-axis

iv) $x+y = 0 \Rightarrow$ Not Parallel to x-axis and Not Parallel y-axis

v) $2x-2y = 0 \Rightarrow$ " " "

(4) Find the value of m and c of the following lines by expressing them in the form of $\boxed{y = mx + c}$

(a) $2x + 3y - 1 = 0$

$3y = 1 - 2x$

$y = \frac{1}{3} - \frac{2}{3}x$

$y = -\frac{2}{3}x + \frac{1}{3}$

$m = -2/3$

$c = 1/3$

(b) $x - 2y = -2$

$\therefore y = mx + c$

$-2y = -x - 2$

$y = \frac{-x}{-2} - \frac{2}{-2}$

$y = \frac{x}{2} + 1$

$y = \frac{1}{2}x + 1$

$m = \frac{1}{2}, c = 1$

(c) $3x + y - 1 = 0$

$\therefore y = mx + c$

$y = -3x + 1$

$m = -3, c = 1$

(d)

$2x - y = 7$

$\therefore y = mx + c$

$\frac{-y}{-1} = \frac{-2x}{-1} + \frac{7}{-1}$

$y = 2x - 7$

$m = 2, \quad c = -7$

(e)

$3 - 2x + y = 0$

$\therefore y = mx + c$

$y = 2x - 3$

$m = 2, c = -3$

(f)

$2x = y + 3$

$\therefore y = mx + c$

$y = 2x - 3$

$m = 2, c = -3$

⑤ Verify whether the following points lies on the line $2x - y + 1 = 0$ or not?

x, y

① $(2, 3)$

$2x - y + 1 = 0$

$2(2) - 3 + 1 = 0$

$4 - 3 + 1 = 0$

$2 \neq 0$

$(2,3)$ does not lie on the given line

ii) $(0, 0)$

$2x - y + 1 = 0$

$2(0) - (0) + 1 = 0$

$1 \neq 0$

$(0,0)$ does not lie on the given line

iii) $(-1, 1)$

$2x - y + 1 = 0$

$2(-1) - 1 + 1 = 0$

$-2 - 1 + 1 = 0$

$-2 \neq 0$

$(-1, 1)$ does not lie on given line

iv) $(2, 5)$

$2x - y + 1 = 0$

$2(2) - 5 + 1 = 0$

$4 - 5 + 1 = 0$

$5 - 5 = 0$

$0 = 0$

$(2, 5)$ lies on the given line

v) $\underset{x}{(5}, \underset{y}{3})$

$2x - y + 1 = 0$

$2(5) - 3 + 1 = 0$

$10 - 3 + 1 = 0$

$8 \neq 0$

$(5,3)$ does not lie on the given line.