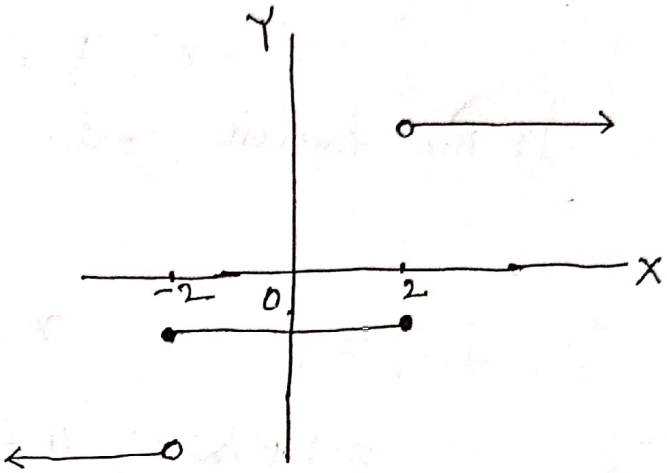
Graphs of Several Functions

Q: Draw the graph of $f(x) = \begin{cases} -4 ; & x < -2 \\ -1 ; & -2 \le x \le 2 \\ 3 ; & x > 2 \end{cases}$

A:- when $x < -2$; $y = -4$

when $-2 \le x \le 2$; $y = -1$

when $x > 2$; $y = 3$



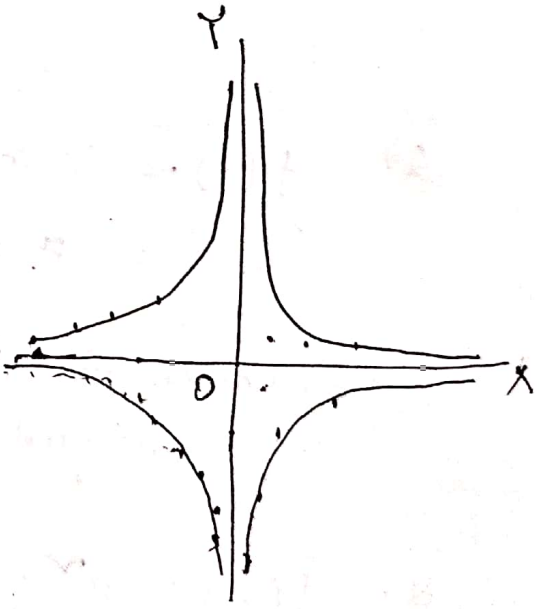
Q: Draw the graph of $f(x) = \frac{1}{x}$; where $x \in \mathbb{R}$.

x : $-4, -3, -2, -1, 0, 1, 2, 3 \cdots$

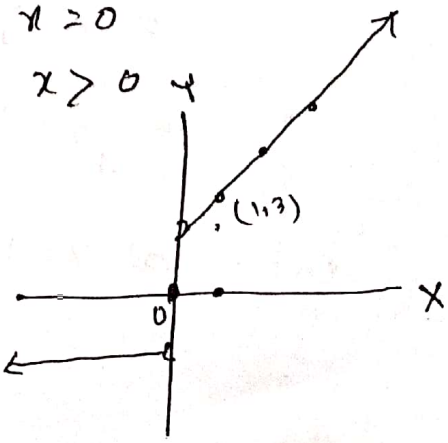
y : $-\frac{1}{4}, -\frac{1}{3}, -\frac{1}{2}, -1, \infty, 1, \frac{1}{2}, \frac{1}{3} \cdots$

x : $-\frac{1}{4}, -\frac{1}{3}, -\frac{1}{2}, -1, \infty, 1, \frac{1}{2}, \frac{1}{3}$

y : $-4 ; -3, -2, -1, \infty, 1, 2, 3$



Q: Sketch the graph of $f(x) = \begin{cases} -1 ; & x < 0 \\ 0 ; & x = 0 \\ x+2 ; & x > 0 \end{cases}$



Q. Draw the graph of $f(x) = |x| + |x+1|$.

A:- when $x < 0$;

x: $-\frac{1}{4}$; $-\frac{1}{3}$, $-\frac{1}{2}$, -1, -2, -3 - - - - .

y: 1; 1; 1, 1, 3, 5 - - - .

when $x = 0$;

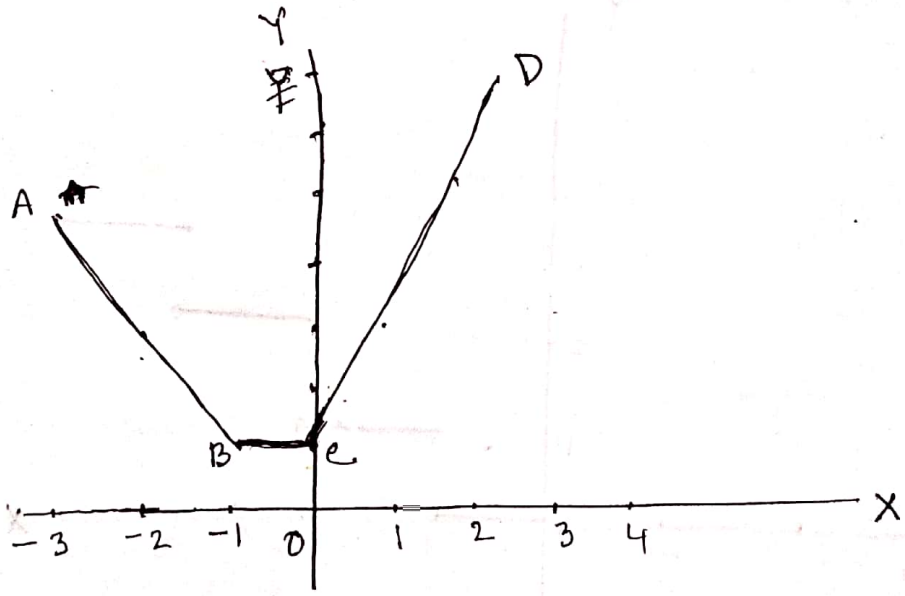
$x = 0$

$y = 1$

when $x > 0$;

x: $\frac{1}{3}$, $\frac{1}{2}$, 1, 2, 3, 4 - - - .

y: $\frac{5}{3}$, 2, 3, 5, 7, 9 - - - - .



Q: Draw the graph of $f(x) = [x]$, where $[x]$ denotes the greatest integer positive or negative but not numerically greater than x.

A:- $y = f(x) = [x]$ may be written as

$f(x) = 0 ; \quad 0 \leq x < 1$

$= 1 ; \quad 1 \leq x < 2$

$= 2 ; \quad 2 \leq x < 3$

$= 3 ; \quad 3 \leq x < 4$

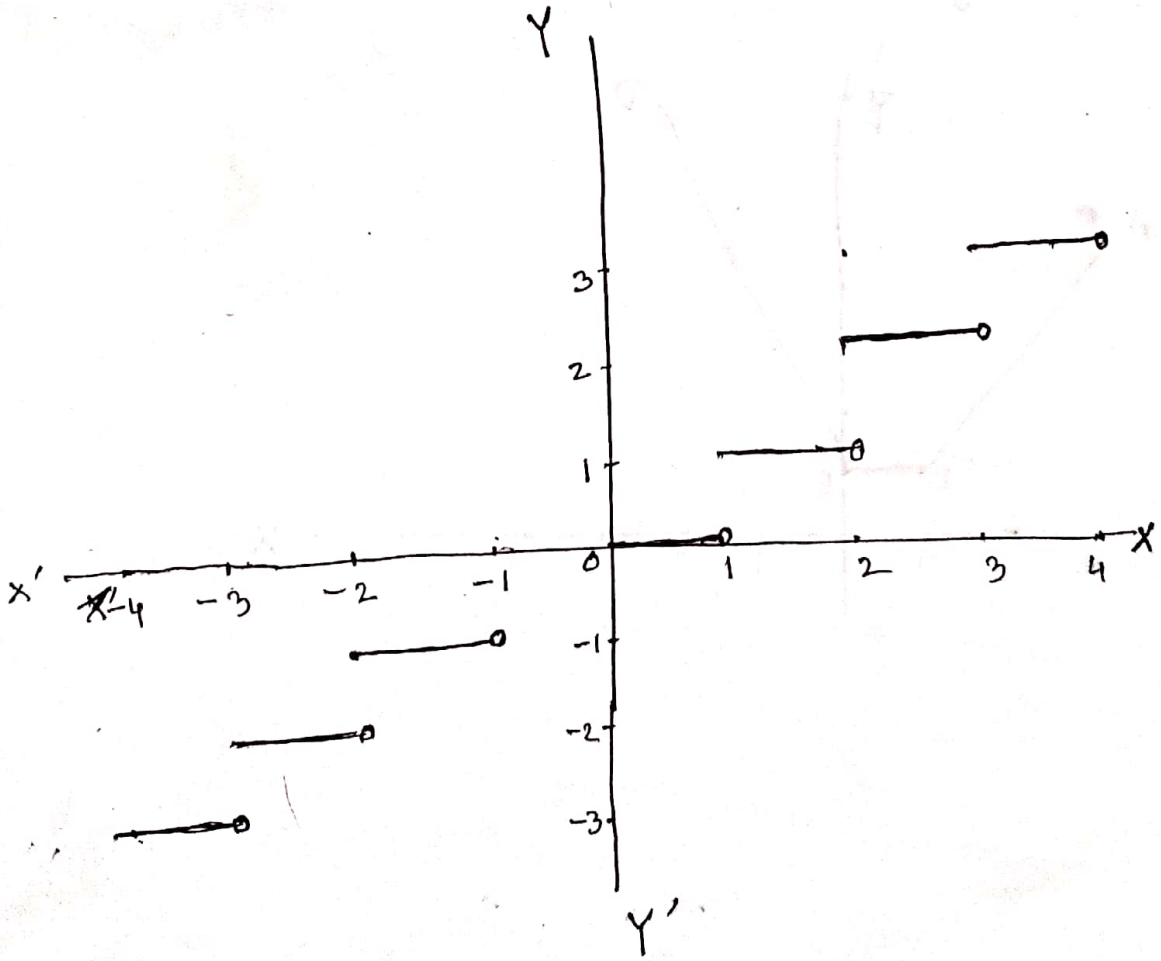
and so on.

$f(x) = -1 ; \quad -2 \leq x < -1$

$= -2 ; \quad -3 \leq x < -2$

$= -3 ; \quad -4 \leq x < -3$

and so on.



Q: Draw the graph of $f(x) = \frac{1}{x}$; $x \in \mathbb{R}$.

x : ..−5, −4, −3, −2, −1, 0, 1, 2, 3, 4, 5

y : $-\frac{1}{5}, -\frac{1}{4}, -\frac{1}{3}, -\frac{1}{2}, -1, \infty, 1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}$

x : $-\frac{1}{5}, -\frac{1}{4}, -\frac{1}{3}, -\frac{1}{2}, -1, 0, 1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}$

y : −5, −4, −3, −2, −1, ∞, 1, 2, 3, 4, 5