

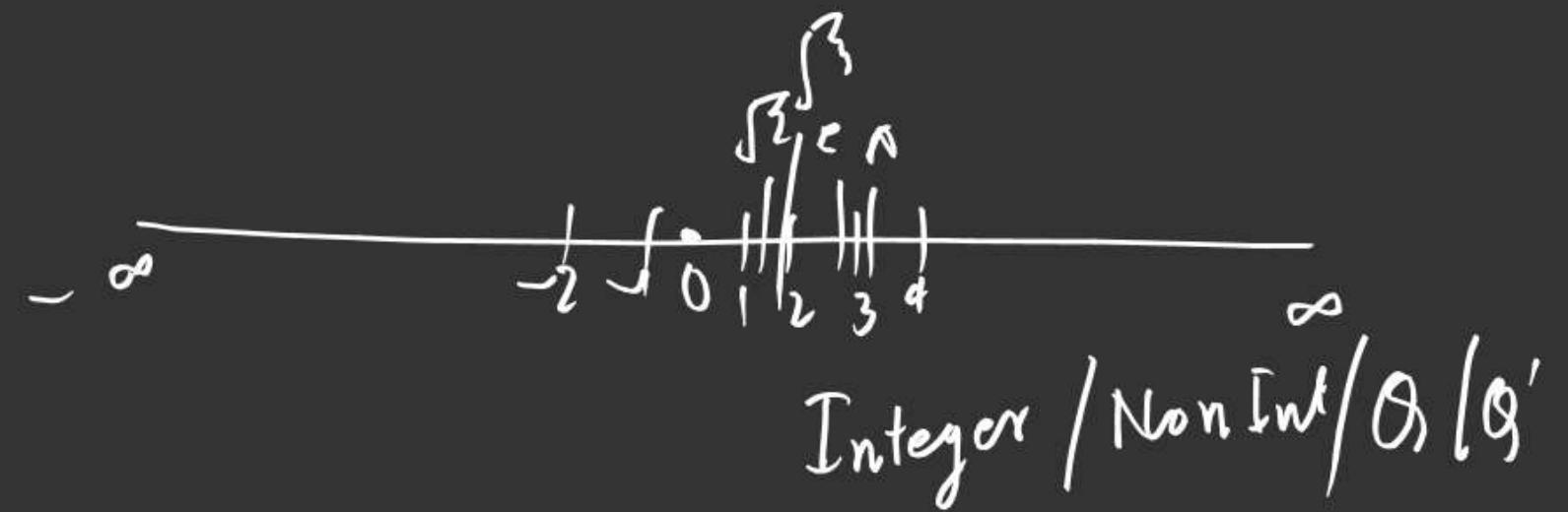
$N, W, I/Z, Q \bar{Q}'$

① Chapter completes over.

② Short Notes

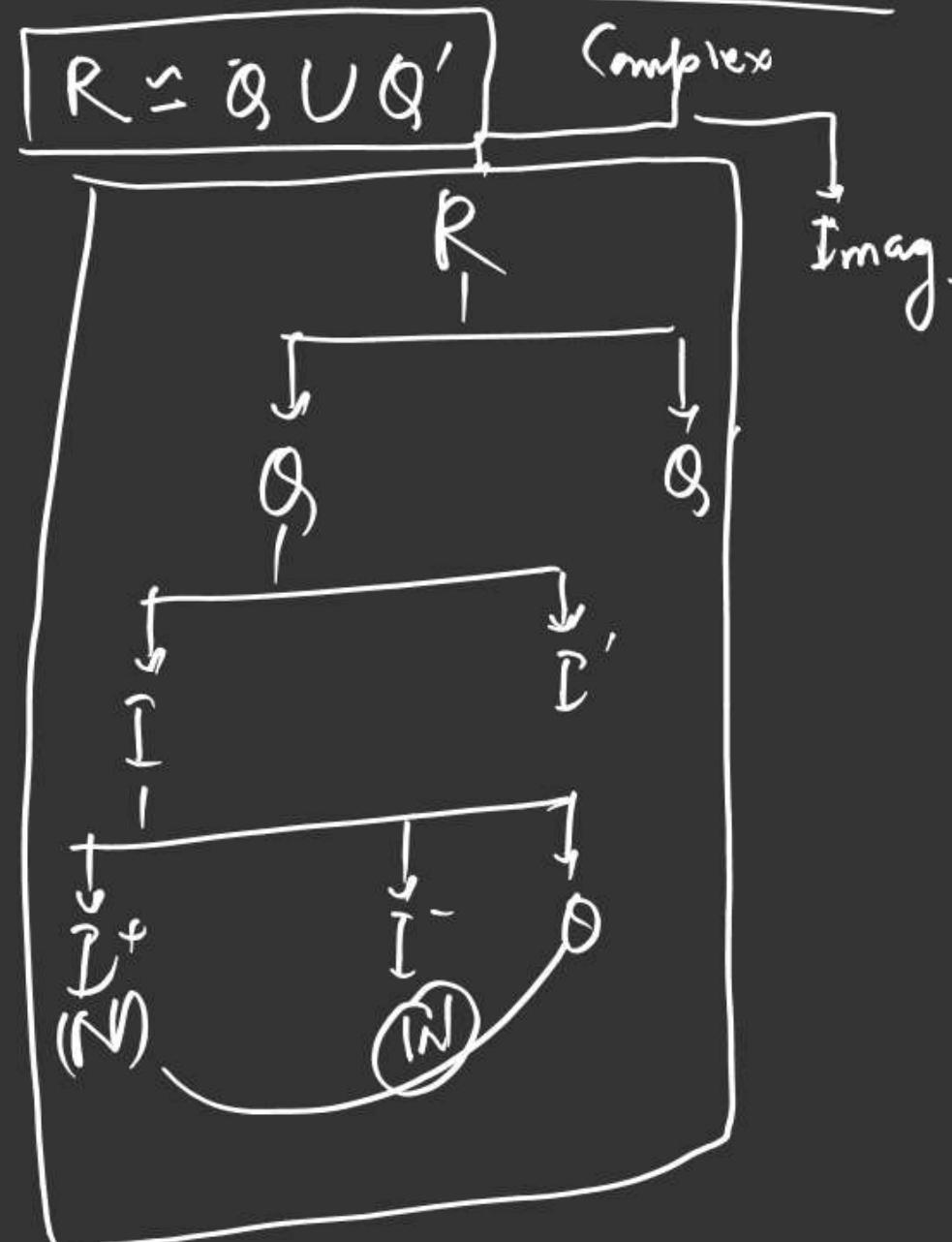
(5) Real No \Rightarrow Rep. by R

Normally we use complete $\times 1 \times 1$



π, e w/ 2 most imp Irr No

$$\pi \approx 3.14, \frac{\pi}{2} \approx 1.57, e \approx 2.718$$



$$\mathbb{C} \supset \mathbb{R} \supset \mathbb{Q} \supset \mathbb{I} \supset \mathbb{N} \supset \mathbb{N}_0$$

II) Interval

() open [close]

$$1 < x < 4 \rightarrow x \in (1, 4) \Rightarrow x \in]1, 4[$$

$$1 \leq x \leq 4 \rightarrow x \in [1, 4]$$

$$x^2 - 7x - 6 = 0$$

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

$$x = -2, 3 \rightarrow x \in \{-2, 3\} \quad \{ \} \text{ shows specific values of } x$$

Board
Math
Advances

Inequality

---ve
less than 0

$$Q_1: x^3 - 6x^2 + 11x - 6 < 0$$

① Solve given eqⁿ & find values of x

$$(x-1)(x-2)(x-3) < 0$$

(2) Put all values of x on No. line



(3) Put +ve sign to rightmost side & change sign for values of x which are given by odd degree brackets

$$x \in (-\infty, 1) \cup (2, 3)$$

Q₂: $(x-1)^2(x+4)^3 < 0$ +ve

$$x \in (-\infty, -4)$$

$$Q_3: (x-1)^2(x+4)^3 \leq 0$$

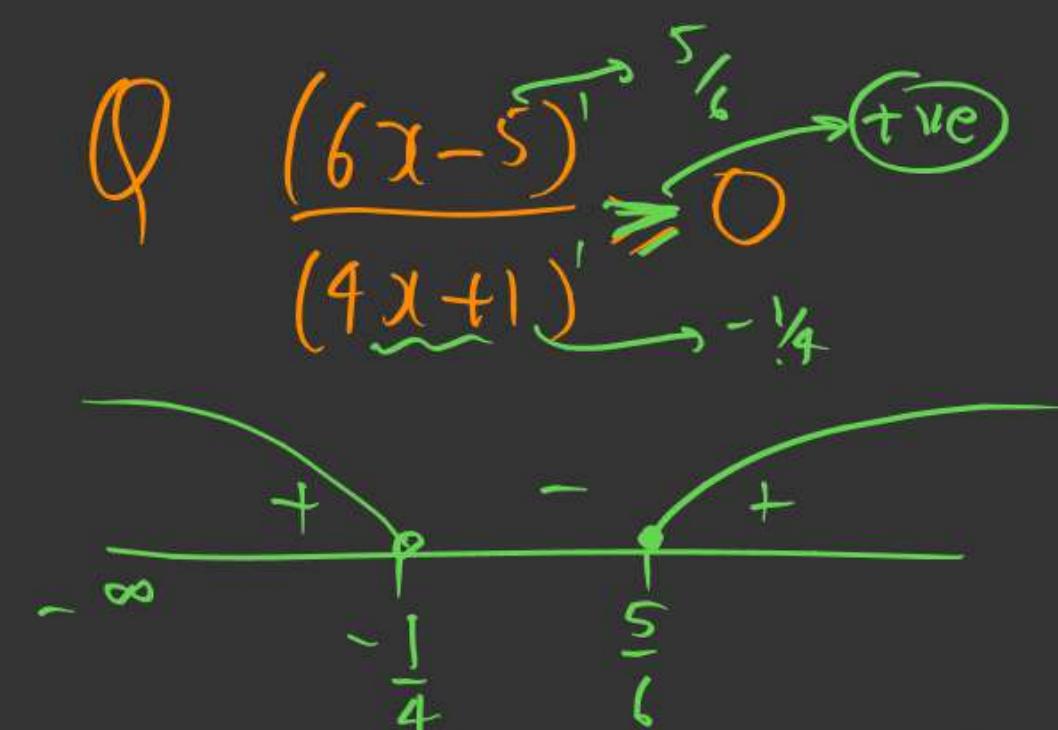
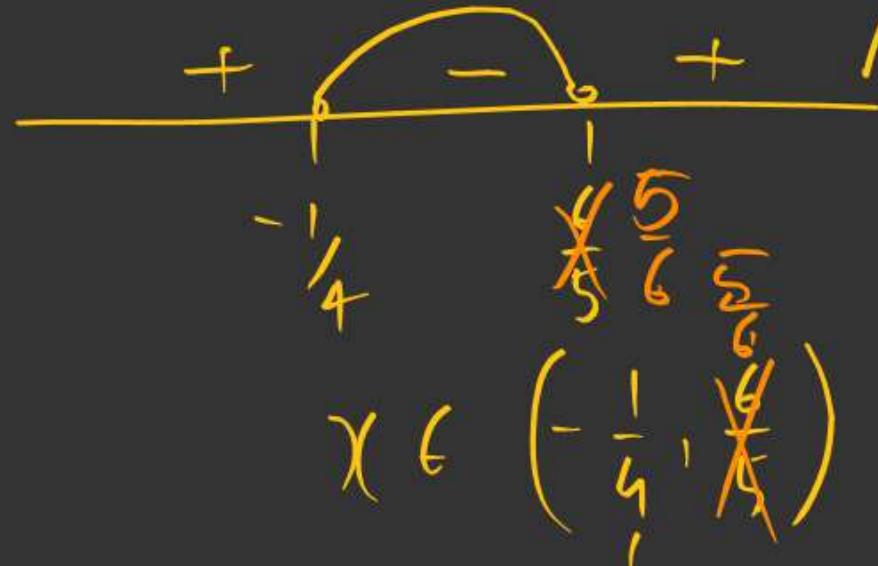


$$x \in (-\infty, -4]$$

$$Q_4 \quad \frac{(6x-5)'}{(4x+1)'} < 0$$

-ve

$\rightarrow -\frac{1}{4}$



$$Q_5 \quad \frac{(6x-5)'}{(4x+1)'} \leq 0$$

+

-

+

$\rightarrow x \in \left[-\frac{1}{4}, \frac{5}{6}\right]$

$$\textcircled{Q} \quad \frac{5}{x^2 - x - 6} \leq 0 \quad \rightarrow \quad y = \frac{-5}{x^2 - x - 6} \quad 150 \text{ m.}$$

$$\frac{+}{(-\text{ve})} = -11e$$

\oplus $\frac{5}{(x-3)(x+2)}$

Pfannkuchen $\rightarrow (x-3)(x+2)$ $\rightarrow -\text{ve Hura.}$

$$\Rightarrow (x-3)(x+2) \leq 0$$



$$x \in (-\infty, -2] \cup [3, \infty)$$

$$\textcircled{Q} \quad \frac{75}{x^2 - 7x + 10} > 0$$

$$\Rightarrow \frac{75}{(x-2)(x-5)} > 0$$

$$\Rightarrow (x-2)(x-5) > 0$$



$$x \in (-\infty, 2) \cup (5, \infty)$$

Q

$$\frac{x^2 - 5x + 6}{x^2 + x + 1} \geq 0$$

$$\Rightarrow \frac{(x-2)(x-3)}{x^2+x+1} \quad \text{← 0}$$

Nr has to be +ve

$$(x-2)(x-3) \geq 0$$



$$x \in (-\infty, 2] \cup [3, \infty)$$

$$a=1, b=-1, c=1$$

D check ab²

$$b^2 - 4ac \\ 1^2 - 4 \times 1 \times 1$$

$$D = -3 < 0$$

$$x^2 + x + 1 > 0$$

$$Q \quad \frac{3}{x-2} < 1$$

$$\frac{3}{x-2} - 1 < 0$$

$$\frac{3-x+2}{(x-2)} < 0$$

$$\frac{(5-x)}{(x-2)} < 0$$

$$\frac{(x-5)}{(x-2)} > 0$$

$$x \in (-\infty, 2) \cup (5, \infty)$$

$$Q \left(\frac{(-2)^2(x+3)^5}{(x-5)^3} \right) \geq 0 \quad +ve$$

\checkmark

$$0 \geq 0 \quad (x-5)^3$$



$$x \in (-\infty, -3] \cup (5, \infty) \cup \{2\}$$

$$0 > 0$$

$$0 > 0$$

$$Q \left(\frac{(x-2)^2(x-3)^5}{(x-5)^3} \right) \leq 0 \quad -ve$$

\checkmark



$$x \in [3, 5] \cup \{2\}$$

JHW

$$Q_1: \frac{(x-2)}{(x-1)} > 2$$

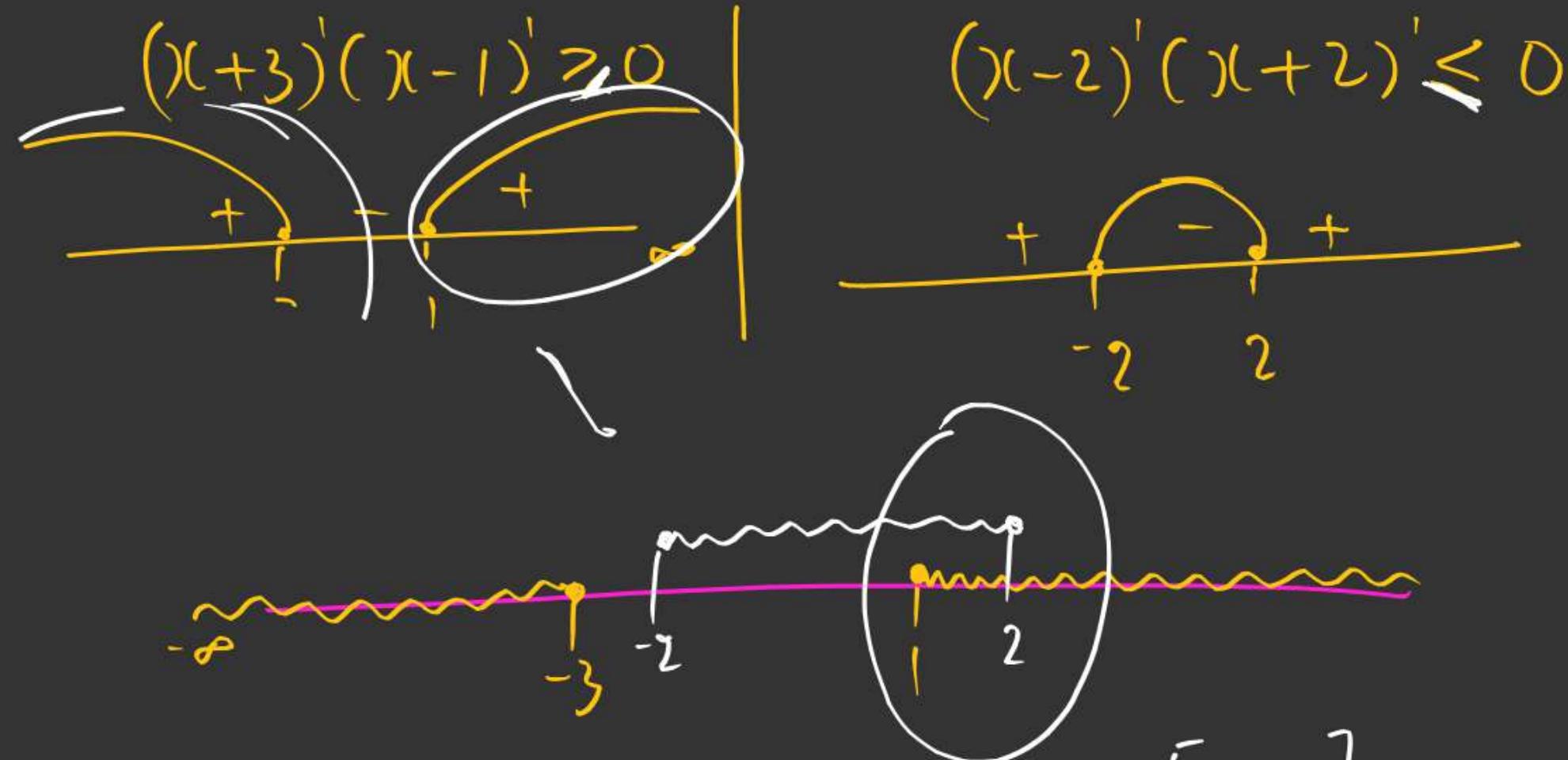
$$2) \frac{5}{x-x^2-1} < 0$$

$$(5) \frac{1}{x} > 2$$

$$(3) \frac{x^2+2x-3}{x^2+x+1} > 0$$

$$(4) \frac{1}{x-1} \leq 2$$

Q Solve $x^2 + 2x - 3 \geq 0$ & $x^2 - 4 \leq 0$



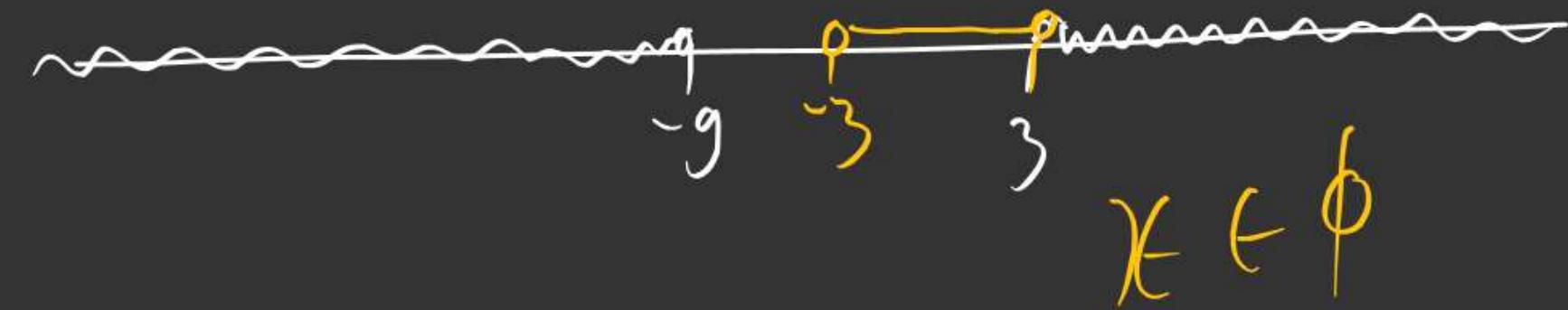
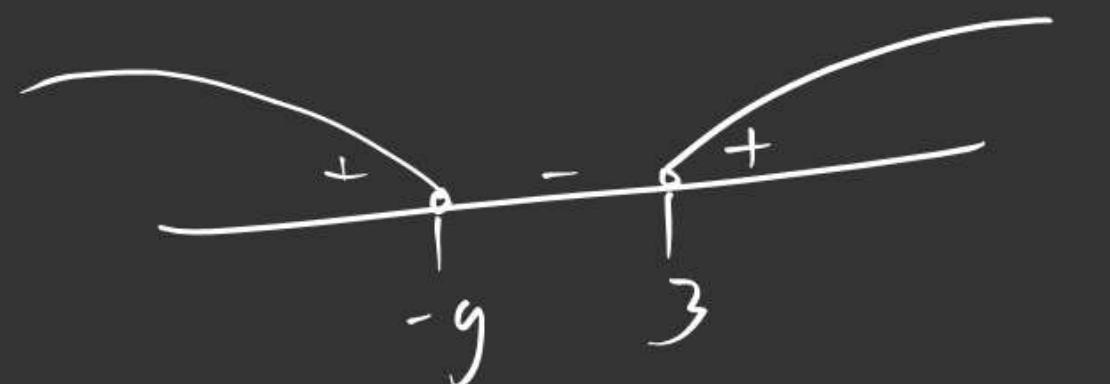
$$x \in [1, 2]$$

Q. $x^2 + 6x - 27 > 0$ & $x^2 - 9 < 0$

$$(x+9)(x-3) > 0$$

$$(x-3)(x+3) < 0$$

(-ve)



$$\text{Q } x^2 + 2x - 3 \geq 0 \text{ & } x^2 - 1 \leq 0$$

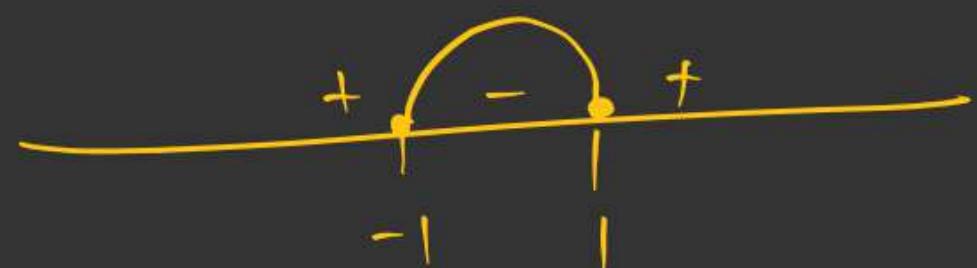
And

$$(x+3)(x-1) \geq 0$$



$$(x-1)(x+1) \leq 0$$

-ve



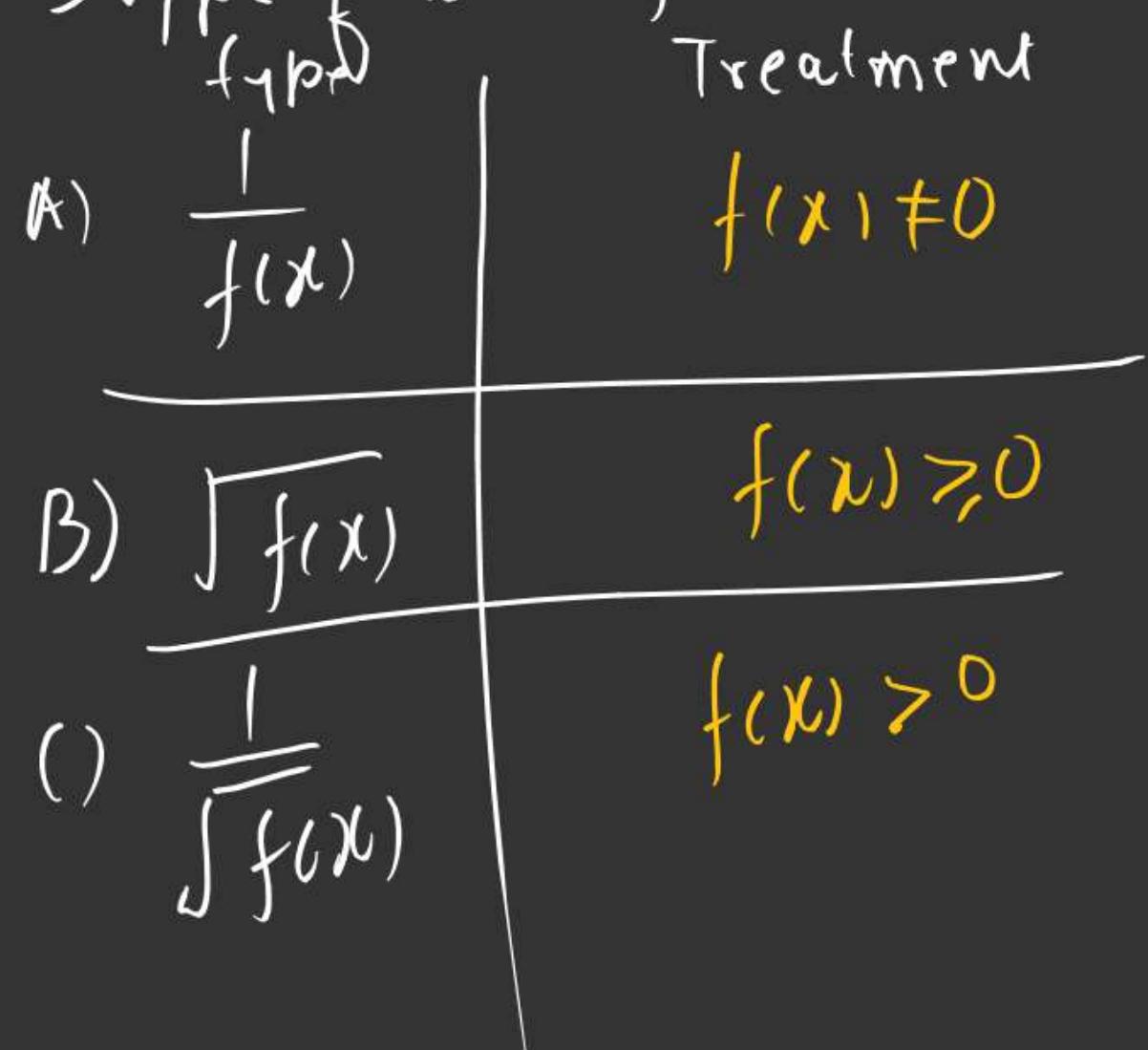
$$x \in \{-1\}$$

11thDomain

$$y = \sqrt{x^2 + 2x - 3}$$

① Values of x for which $f(x)$ is defined

② 3 types of Basic $f(x)$'s Domain



Q $y = \frac{1}{x^2 + 2x - 3}$ find Dom?

$$x^2 + 2x - 3 \neq 0$$

$$(x+3)(x-1) \neq 0$$

$$x \neq -3, 1$$



$$x \in \underline{(-\infty, \infty)} \setminus \{-3, 1\}$$

Htakar

$$x \in R - \{-3, 1\}$$

$$\text{Q } y = \sqrt{x^2 + 2x - 3} \text{ find Domain?}$$

$\rightarrow \sqrt{f(x)} \quad f(x) \geq 0$

$$x^2 + 2x - 3 \geq 0$$

$$(x+3)(x-1) \geq 0$$

$$x \in (-\infty, -3] \cup [1, \infty)$$