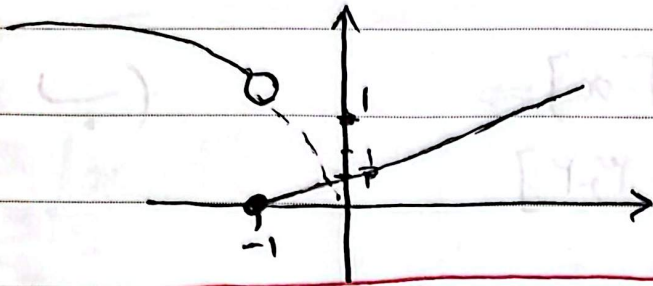


آزمون درسیه

① تابع است. $y \geq 0 \rightarrow \frac{x+1}{3} = y \rightarrow \frac{1}{3}x + \frac{1}{3} \checkmark$

$y > 1 \rightarrow x = -y^2 \rightarrow -x = y^2 \rightarrow \sqrt{-x} = y$
 $y = 1 \rightarrow x = -1$



② $\frac{x f(x-2)}{f(x)} \geq 0 \rightarrow$

-4	-2	0	3	5	7
$-$	$+$	$-$	$+$	$-$	$+$

$D_f = (-4, -2] \cup [0, 3) \cup [7, +\infty)$

③ $x(x^2-4) = 0$
 $\downarrow \quad \downarrow$
 $0 \quad \pm 2$
 $D_f = \mathbb{R} - \{0, +2, -2\}$ (الف)

$\Delta = 4 - 16 \xrightarrow{\alpha=2>0} \text{همواره مثبت}$

$\frac{x^2 - 12x + 16}{x(x-2)(x+2)}$

-2	0	2
$-$	$+$	$-$

$D = (-2, 0) \cup (2, +\infty)$

آزمون ریسمانچیان

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

$\rightarrow \pm 2$

الف) (۴)

$$\frac{-2}{-} + \frac{+2}{+} \rightarrow D = (-2, +\infty) - \{2\}$$

ب) (۵)

$$2 - 2[-x] \neq 0 \Rightarrow 2 \neq [-x] \Rightarrow -x \notin [2, 3] \Rightarrow x \neq (-3, 2]$$

$$D = \mathbb{R} - (-3, -2]$$

الف) (۵)

$$\textcircled{1} x(x+1)(x-1) \geq 0 \rightarrow \frac{-1}{-} + \frac{0}{+} + \frac{+1}{-} \rightarrow [-1, 0] \cup [1, +\infty)$$

ب) (۶)

$$|x| + x > 0 \rightarrow \begin{cases} x > 0 \Rightarrow |x| + x > 0 \\ x \leq 0 \Rightarrow |x| + x = 0 \end{cases}$$

$$\Rightarrow D_f = [1, +\infty)$$

ب) (۷)

$$\textcircled{1} |x-2| - x^2 \geq 0 \rightarrow |x-2| \geq x^2 \rightarrow \begin{cases} x-2 \geq x^2 \rightarrow 0 \geq x^2 - x + 2 \quad \times \\ x-2 \leq -x^2 \rightarrow x^2 + x - 2 \leq 0 \\ (x+2)(x-1) \leq 0 \end{cases}$$

(۷) (۱)

$$\Rightarrow [-2, 1]$$

ب) (۸)

$$|x| - 1 \neq 0 \Rightarrow |x| \neq 1 \Rightarrow x \neq \pm 1$$

$$\Rightarrow D_f = [-2, 1) - \{-1\}$$

$$(x-2) [x-2] \geq 0$$

$\downarrow$ $[x]-2=0 \Rightarrow x \in [2, 3]$

الف) ⑥

$$\begin{array}{c} 2 \quad 3 \\ + \quad | \quad 0 \quad | \quad + \end{array}$$

$$D = \mathbb{R}$$

$$|x-1| [x-3] \geq 0$$

$\downarrow$ $[x]-3=0 \Rightarrow x \in [3, 4]$

ب) ⑦

$$\begin{array}{c} 3 \quad 4 \\ - \quad | \quad 0 \quad | \quad + \end{array}$$

$$D = [3, +\infty)$$

$$||x-2|-1|-K \neq 0$$

$$||x-2|-1| \neq K \begin{cases} \rightarrow |x-2| \neq K+1 \\ \quad \downarrow \\ \quad 2 \Rightarrow K+1=2 \Rightarrow K=1 \end{cases}$$

برای اینکه سه جواب داشته باشیم باید در یکی از حالات $|x-2|=0$ باشد.

$$|x-2| \neq 1-K \quad \hookrightarrow |x-2|=2 \Rightarrow x = \{0, 4\}$$

$\hookrightarrow \{0, 2, 4\}$ جواب ها

$$\Rightarrow K = -1$$

$$x^2 + 3x + 2 \neq 0 \Rightarrow x \neq \{-1, -2\}$$

ا) ⑧

$$x+1 \neq 0 \rightarrow x \neq -1$$

$$x-1 \neq 0 \rightarrow x \neq 1$$

$$\Rightarrow n=3 \rightarrow x^2 - 9x + 9 = 0 \rightarrow (x-3)^2 = 0 \rightarrow x=3$$

یک ریشه

Scanned with

$$\left. \begin{array}{l} x+1 \neq 0 \rightarrow x \neq -1 \\ x+1 \neq 1 \end{array} \right\} (-1, +\infty) - \{1\} \quad (9)$$

$$x > 0$$

$$x \neq 1$$

$$\log_x \frac{1}{x} > 0 \Rightarrow \frac{\log \frac{1}{x}}{\log x} > 0 \Rightarrow \log x < 0 \Rightarrow 0 < x < 1$$

$$\Rightarrow x \in (0, 1)$$

$$-2 \leq |x|^2 - 1 \leq 2 \rightarrow -\sqrt{3} \leq |x| \leq \sqrt{3} \quad (10)$$

$$\Rightarrow -\sqrt{3} \leq x \leq \sqrt{3} \Rightarrow |x| \leq \sqrt{3} \Rightarrow -\frac{1}{\sqrt{3}} \leq x \leq \frac{1}{\sqrt{3}}$$