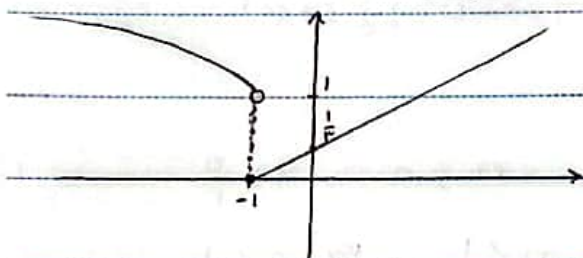


$$x = \begin{cases} 2y - 1, & y \geq 0 \rightarrow y = \frac{x}{2} + \frac{1}{2}, \quad \frac{x}{2} + \frac{1}{2} \geq 0 \rightarrow x \geq -1 \\ -y^2, & y > 1 \rightarrow y = \sqrt{-x}, \quad \sqrt{-x} > 1 \rightarrow -1 > x \rightarrow \textcircled{1} \cap \textcircled{2} = (-\infty, -1) \end{cases}$$

$$D = (-\infty, 0] \textcircled{1}$$



تابع است.

$$g(x) = \sqrt{\frac{x f(x-2)}{f(x)}}$$

	-4	-2	0	2	4	6
x	-	-	0	+	+	+
$f(x-2)$	-	-	0	+	+	0
$f(x)$	-	+	+	+	-	+
$g(x)$	-	+	0	+	-	+

$$D = (-4, -2] \cup [0, 2) \cup [4, +\infty)$$

* در هم تعریف نشده بودن نمی چون قوی دامنه مورد نظر نبوده بحال نشوند.

$$f(x) = \frac{2x^2 - 2x + 2}{x^2 - 4x} \rightarrow \Delta < 0 \rightarrow D_{f(x)} = \mathbb{R} - \{-2, 0, 2\}$$

$$g(x) = \sqrt{\frac{x-2}{x^2 - 2x^2 - 1}} \quad x-2=0 \rightarrow x=2$$

$$D_{f(x)} = (-2, 0) \cup (2, +\infty)$$

$$y = \sqrt{\frac{x-2}{x^2 - 2x^2 - 1}} \quad x^2 - 2x^2 - 1 = 0 \quad t = x^2 \rightarrow t^2 - 2t - 1 = 0$$

$$(t-4)(t+2) = 0 \rightarrow t = 4 \rightarrow x = \pm 2$$

$$t = -2 = x^2 \text{ غلط}$$

$$x \mid \begin{array}{cc} -2 & +2 \\ - & + \end{array}$$

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

MR

$$\text{ب.) } y = \frac{2x^2 - 1}{x - 2} \rightarrow \Delta < 0$$

$$x - 2 \cdot [-x] = 0 \rightarrow x = 2 \cdot [-x] \rightarrow x = [-x]$$

$$\rightarrow x \leq -x < 2 \rightarrow -x \geq x > 2 \rightarrow x \in (-2, -1]$$

$$\Rightarrow D = \mathbb{R} - (-2, -1] \checkmark$$

$$\text{الف.) } f(x) = \frac{\sqrt{x(x^2 - 1)}}{\sqrt{|x| + x}} \rightarrow x(x-1)(x+1) \quad x \mid \begin{array}{c} -1 \quad 0 \quad 1 \\ - \quad + \quad - \quad + \end{array} \rightarrow [-1, 0] \cup [1, +\infty) \textcircled{1}$$

$$y = |x| + x = \begin{cases} 2x & x \geq 0 \\ 0 & x \leq 0 \end{cases} \rightarrow (0, +\infty) \textcircled{2} \Rightarrow \textcircled{1} \cap \textcircled{2} = D = [1, +\infty) \checkmark \textcircled{r}$$

$$\text{ب.) } f(x) = \frac{\sqrt{|x-2| - x^2}}{|x| - 1} \quad |x| - 1 = 0 \rightarrow x = \pm 1 \textcircled{1}$$

$$|x-2| - x^2 \geq 0 \rightarrow |x-2| \geq x^2 \rightarrow \begin{cases} x-2 \geq x^2 \rightarrow x^2 - x + 2 \leq 0 \rightarrow D = \emptyset \\ x-2 \leq -x^2 \rightarrow x^2 + x - 2 \leq 0 \end{cases} \quad x \mid \begin{array}{c} -2 \quad 1 \\ + \quad - \quad - \quad + \end{array} \rightarrow [-2, 1] \textcircled{2}$$

$$D = \textcircled{1} \cap \textcircled{2} = [-2, -1) \cup (-1, 1) \checkmark$$

$$\text{الف.) } y = \sqrt{(x-2)[x-3]} \quad \text{intermediate value theorem } [a, b] \text{ and } a \rightarrow y$$

$$\rightarrow a[a] \geq 0 \rightarrow (x-2)[x-3] \geq 0 \rightarrow D = \mathbb{R} \checkmark \textcircled{r}$$

$$\text{ب.) } y = \sqrt{|x-1|} [x-2]$$

	1	2	3
$ x-1 $	+	0	+
$[x-2]$	-	-	0
y	-	0	-

	1	2	3
$ x-1 $	+	0	+
$[x-2]$	-	-	0
y	-	0	-

	1	2	3
$ x-1 $	+	0	+
$[x-2]$	-	-	0
y	-	0	-

$$D = [2, +\infty) \cup \{1\} \checkmark$$

Subject.

Day. Month. Year.

$$g = \frac{1}{||x-2|-1|-k}$$

۷- برای اینکه ۳ عدد صحیح عبارت را صفر کنند باید $|x-2|-1$ برابر صفر شود. فقط یک جواب ایجاد کنند.

$$||x-2|-1|-k=0 \rightarrow ||x-2|-1|=k \xrightarrow{k=1} |x-2|-1=1 \rightarrow x=0, 4$$

$$|x-2|-1=-1 \rightarrow x=2$$

$$\Rightarrow \boxed{k=1} \checkmark$$

$$x^2 + 3x + 2 = 0 \rightarrow (x+1)(x+2) = 0 \quad x = -1, x = -2$$

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

$$\Rightarrow n=3 \checkmark$$

$$x-1=0 \rightarrow x=1$$

$$\Rightarrow x^2 - 6x + 9 = 0 \rightarrow (x-3)^2 = 0 \rightarrow x=3 \checkmark$$

$$x+1 > 0 \rightarrow x > -1 \quad (1) \quad x > 0 \quad (3)$$

$$x+1 \neq 1 \rightarrow x \neq 0 \quad (2) \quad x \neq 1 \quad (4)$$

$$(1) \cap (2) \cap (3) \cap (4) = D = (0, +\infty) - \{1\}$$

$$-5 \leq 3x^2 - 1 \leq 3 \rightarrow -5 \leq 3x^2 - 1 \rightarrow -4 \leq 3x^2$$

$$\downarrow 3x^2 - 1 \leq 3 \rightarrow 3x^2 \leq 4 \rightarrow x^2 \leq \frac{4}{3} \Rightarrow -\frac{2}{\sqrt{3}} \leq x \leq \frac{2}{\sqrt{3}}$$

$$\Rightarrow D = \left[-\frac{2\sqrt{3}}{3}, \frac{2\sqrt{3}}{3} \right] \checkmark$$

$$1) \quad n+1 > 0 \rightarrow n > -1, \quad n+1 \neq 1 \rightarrow n \neq 0$$

$$2) \quad n > 0, \quad n \neq 1$$

$$\xrightarrow{n} D_f = (0, 1)$$

$$3) \quad \lg \frac{1}{n} > 0 \rightarrow 0 < n < 1$$