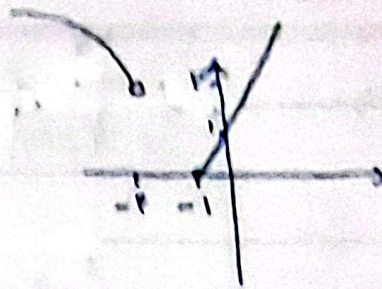


$$\alpha = \frac{1}{2}y - 1 \rightarrow \frac{\alpha + 1}{2} = y \quad x > -1$$

$$-y^2 = x \rightarrow y = \sqrt{-x} \quad \alpha < -1$$

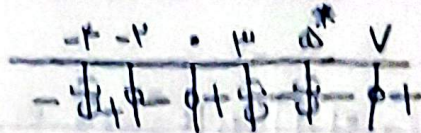


۱- تابع معکوس

$$f(\alpha) \rightarrow -1, 1, \infty$$

$$\alpha \rightarrow$$

$$f(\alpha - 1) \rightarrow -1, \infty, 1$$



$$D_f(x) = (-1, 1] \cup [1, \infty)$$

$$\alpha = 1 \rightarrow +$$

$$x^3 - 2x \neq 0 \rightarrow x(x^2 - 2) \neq 0$$

همیشه مثبت است

$$D_f(x) = \mathbb{R} - \{-2, 2, 0\}$$

$$\frac{2x^2 - 14x + 1}{x^3 - 2x} > 0 \rightarrow \frac{-2 \quad 1}{-1 \quad 1 \quad 1} \rightarrow D_f = (-2, 0) \cup (1, \infty)$$

$$\sqrt{\frac{x-1}{x^2-14x+1}}$$

$$\frac{x-1}{x^2-14x+1} \geq 0$$

$$\frac{-1 \quad 1}{-1 \quad 1 \quad 1}$$

$$D_{\text{معرّف}} = (-1, +\infty) - \{1\}$$

$$x^2 - 2 = 0 \rightarrow x = \pm \sqrt{2}$$

معرّف

$$x - 2[-x] \neq 0 \rightarrow x \neq 2[-x] \rightarrow x \neq -2x \rightarrow x < -x < 1 \rightarrow -2 \geq x > 1$$

$$(-1, -2]$$

$$x(x^2 - 1) \geq 0 \rightarrow \frac{-1 \quad 0 \quad 1}{-1 \quad 1 \quad 1} \rightarrow [1, +\infty) = D_f$$

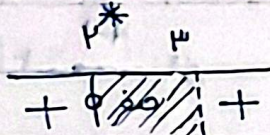
$$|x| + x > 0 \rightarrow (0, +\infty)$$

$$|x| \neq 1 \rightarrow x \neq \pm 1$$

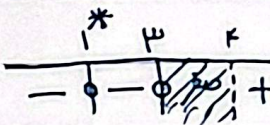
$$|x - 2| - x^2 \geq 0 \rightarrow x > 2 \rightarrow -x^2 + x - 2 \geq 0 \rightarrow \frac{-1 \quad 2}{-1 \quad 1 \quad 1} \rightarrow \frac{1}{2} \rightarrow [-2, 1) - [-1] = D_f$$

sam

$$x < 2 \rightarrow -x^2 - x + 2 \geq 0 \rightarrow x^2 + x - 2 \leq 0 \rightarrow \frac{-2 \quad 1}{-1 \quad 1 \quad 1}$$

الف) $x-2 \geq 0 \rightarrow$  $D_f = \mathbb{R}$

$\downarrow$
 $[2, 3)$

ب) $|x-1|[x-3] \geq 0 \rightarrow$  $D_f = [3, +\infty) \cup \{1\}$

$\downarrow$
 $[3, 4)$

$||x-1|-1| = k$

$\boxed{k=1} \rightarrow ||x-1|-1| = 1$ $\xrightarrow{x}$ $\boxed{k=2} \rightarrow ||x-1|-1| = 2 \rightarrow |x-1|-1 = 2 \rightarrow |x-1| = 3 \rightarrow x = 4, -$

$|x-1|-1 = 1 \rightarrow |x-1| = 2 \rightarrow x = 3, -$ $|x-1|-1 = -1 \rightarrow |x-1| = 0 \rightarrow x = 1$ $\downarrow$ $|x-1|-1 = -2 \rightarrow |x-1| = -1$ $\times$ غير ممكن

$|x-1| = 2 \rightarrow x = 3, -$ $\alpha = 2$ $\checkmark$ $\boxed{k=3} \rightarrow ||x-1|-1| = 3 \rightarrow |x-1| = 4 \rightarrow x = 5, -$

$\downarrow$ $|x-1| = -2$ غير ممكن

$\boxed{k=1}$

$\alpha \neq 1, -1, -1^*, -2^* \rightarrow n = 3$

$\alpha^2 - 9 = 0 \rightarrow$ $\alpha = 3$ $\rightarrow$ $\alpha = 3$

$\alpha + 1 > 0 \rightarrow \alpha > -1$ ①

①, ②, ③ $\cap \rightarrow (2, +\infty) = D_f$

$\alpha + 1 \neq 1 \rightarrow \alpha \neq 0$ ②

$\frac{1}{\alpha} \log \alpha > 0 \rightarrow \alpha > 0 \rightarrow \frac{1}{\alpha} \log \alpha > 0 \rightarrow \frac{1}{\alpha} > 1 \rightarrow \alpha > 1$ ③

$-1 \leq \alpha \leq 3 \rightarrow \alpha \leq 3 \rightarrow \alpha^2 \leq 9 \rightarrow 3\alpha^2 \leq 27 \rightarrow 3\alpha^2 - 1 \leq 26$ 1.

$-1 \leq \alpha \rightarrow \alpha \geq -1 \rightarrow \forall \alpha \geq -1 \rightarrow \forall \alpha \geq 3\alpha^2 - 1$

$D_f = (-\infty, 26]$
 $(3\alpha^2 - 1)$

Sam