

(الف) $y = \frac{x+3}{2x^3+3x^2-11x+3} \Rightarrow \frac{x+3}{(x-1)(2x^2+5x-3)}$ (1) $(\frac{1}{2})(x-1)(x+6)$

$D_f = \mathbb{R} - \{-3, \frac{1}{2}, 1\}$: صورت کسر مثبت است پس کسر منفی می شود

(ب) $y = \frac{x+3}{2x^3+9x^2+10x+3} \Rightarrow \frac{x+3}{(x+1)(2x^2+7x+3)}$ (1) $(x+1)(x+6)$

$D_f = (-3, -1) \cup (-\frac{1}{2}, +\infty) \setminus \mathbb{R} - \{-3, -1, -\frac{1}{2}\}$

(الف) $y = \frac{x+3}{x^3-2x^2+2x-1} \Rightarrow \frac{x+3}{(x-1)(x^2-x+1)}$ (1) $(x-1)(x^2-x+1)$ این عبارت متغیر است

$\Rightarrow D_f = \mathbb{R} - \{1\}$

فقط مثبت است
و کسر متغیر مثبت دارد

(ب) $y = \sqrt{\frac{x+3}{x^3-2x^2+2x-1}} \Rightarrow \frac{x+3}{(x-1)(x^2-x+1)} \geq 0$ (1) $\frac{x+3}{(x-1)^3} \geq 0$

$D_f = (-\infty, -3] \cup (1, +\infty)$

(3) $y = \frac{2}{x^2-\omega|x-1|-2x+\omega} \Rightarrow x^2-\omega|x-1|-2x+\omega \neq 0$ فرض مخالف می باشد

$\begin{cases} x^2-\omega x+\omega-2x+\omega \neq 0 \Rightarrow x^2-\sqrt{x}+1 \neq 0 & (x-2)(x-\omega) \neq 0 \\ x^2+\omega x-\omega-2x+\omega \neq 0 \Rightarrow x^2+3x \neq 0 & (x-2)(x-\omega) \neq 0 \end{cases}$

$\Rightarrow D_f = \mathbb{R} - \{-3, 0, 1, \omega\}$

$$(الف) y = \frac{x+3}{|2x+1| - |x+3|} \quad |2x+1| - |x+3| \neq 0 \quad |2x+1| \neq |x+3| \quad (2)$$

$$(2x+1)^2 \neq (x+3)^2 \Rightarrow 4x^2 + 4x + 1 \neq x^2 + 6x + 9 \quad (1)$$

$$\Rightarrow 3x^2 - 2x - 8 \neq 0 \Rightarrow x^2 - 2x - \frac{8}{3} \neq 0 \quad (x-4)(x+\frac{2}{3})$$

$$D = \mathbb{R} - \left\{ -\frac{8}{3}, 4 \right\} \quad \left\{ \begin{array}{l} 2x+1 \neq x+3 \Rightarrow x \neq 2 \\ 2x+1 \neq -x-3 \Rightarrow x \neq -\frac{4}{3} \end{array} \right. \quad (10)$$

$$(ب) y = \sqrt{|2x+1| - |x+3|} \Rightarrow |2x+1| - |x+3| \geq 0 \quad |2x+1| \geq |x+3|$$

$$\Rightarrow (2x+1)^2 \geq (x+3)^2 \Rightarrow 4x^2 + 4x + 1 \geq x^2 + 6x + 9$$

$$\Rightarrow 3x^2 - 2x - 8 \geq 0 \Rightarrow x^2 - 2x - \frac{8}{3} \geq 0 \Rightarrow (x-4)(x+\frac{2}{3}) \geq 0$$

x	$-\frac{8}{3}$	4
y	+	-

$$D = (-\infty, -\frac{8}{3}] \cup [4, +\infty)$$

$$(الف) y = \log_2(1 - \log_3^x) \Rightarrow 1 - \log_3^x > 0 \Rightarrow \log_3^x < 1 \Rightarrow x < 3 \quad (I)$$

$$x > 0 \quad (II) \Rightarrow D = I \cap II = (0, 3) \leftarrow \text{جواب} \quad (1)$$

$$(ب) y = \log_2(1 - \log_{\frac{1}{2}}^x) \Rightarrow 1 - \log_{\frac{1}{2}}^x > 0 \Rightarrow \log_{\frac{1}{2}}^x < 1 : x > \frac{1}{2}$$

$$(II): x > 0 \quad D = (\frac{1}{2}, +\infty)$$

$$(I) \cap (II)$$

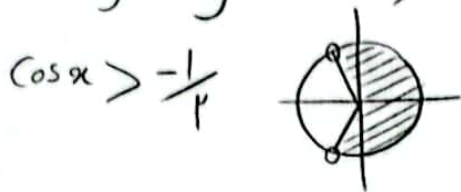
$$f(x) = \sqrt{\log_2 \log_{\omega}^{(2x-1)}} \quad \begin{cases} (I): 2x-1 > 0 \Rightarrow 2x > 1 \Rightarrow x > \frac{1}{2} \\ (II): \log_{\omega}^{2x-1} > 0 \Rightarrow 2x-1 > 1 \Rightarrow 2x > 2 \Rightarrow x > 1 \end{cases} \quad (1)$$

$$\log_{\omega} \log_{\omega}^{(2x-1)} \geq 0 \Rightarrow \log_{\omega}^{2x-1} \leq \frac{1}{\omega} \Rightarrow 2x-1 \leq \omega \quad (2)$$

$$\Rightarrow 2x \leq \omega + 1 \Rightarrow x \leq \frac{\omega+1}{2} \quad D = I \cap II \cap III = (1, 3]$$

$$(III)$$

$$\text{الف) } y = \log(r \cos \alpha + 1) \quad r \cos \alpha + 1 > 0 \Rightarrow r \cos \alpha > -1$$



$$\cos \alpha > -\frac{1}{2} \quad \frac{2k\pi - \frac{2\pi}{3}}{\pi} < \alpha < \frac{2k\pi + \frac{2\pi}{3}}{\pi}$$

$$D_I = \left(2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3}\right)$$

$$\text{ب) } y = \sqrt{\log \frac{x-1}{x+1}} \quad \text{شرط 1) } \frac{x-1}{x+1} > 0 \quad \begin{array}{c|c|c} -1 & 1 \\ \hline + & - & + \end{array} \quad (I)$$

$$\Rightarrow (-\infty, -1) \cup (1, +\infty)$$

شرط 2)

$$\frac{x-1}{x+1} \geq 1 \Rightarrow \frac{x-1-(x+1)}{x+1} \geq 0 \Rightarrow \frac{-2}{x+1} \geq 0$$

$$\Rightarrow \frac{-2}{x+1} \geq 0 \Rightarrow \text{فجج اید منفر سرد} \Rightarrow x+1 < 0 \Rightarrow x < -1 \quad (II)$$

$$D_I = I \cap II = (-\infty, -1) \leftarrow \text{جواب}$$

$$f(x) = \sqrt{(a+2)x^2 + ax + b} \quad (-\infty, 3] \Rightarrow (a+2)x^2 + ax + b \geq 0 \quad (1)$$

$$a+2=0 \Rightarrow a=-2 \quad \begin{array}{l} \text{سائل یک ریشه است پس عبارت} \\ \text{درجه اول است} \end{array}$$

$$\hookrightarrow \text{جایگذاری: } \sqrt{-2x+b} \Rightarrow -2x+b \geq 0 \Rightarrow -2x \geq -b \Rightarrow 2x \leq b$$

$$\hookrightarrow \text{در بازه } (-\infty, 3] \text{ بیشترین مقدار برای } x \text{ عدد 3 است پس جایگذاری می کنیم: } b \geq 6$$

$$-2(3) + b = 0 \Rightarrow \text{در بازه 3 مقدار صفر می شود} \Rightarrow b=6$$

$$f(x) = \sqrt{x^2 + 2x + 2 - m^2} \quad D_f = \mathbb{R} \quad x^2 + 2x + 2 - m^2 \geq 0 \quad \begin{array}{l} \text{همواره عبارت اید +} \\ \text{باشد پس } \Delta \leq 0 \end{array} \quad (2)$$

$$\Delta \leq 0 \Rightarrow \Delta: 4 - 4(1)(2 - m^2) \leq 0$$

$$\Rightarrow 4m^2 \leq 4 \Rightarrow m^2 \leq 1 \Rightarrow -1 \leq m \leq 1$$

$$1 - (-1) = 2 \leftarrow \text{جواب}$$

$$f(x) = \frac{\sqrt{r-x^2}}{[x] + [-x] + 1} \quad r-x^2 \geq 0 \Rightarrow (r-x)(r+x) \geq 0 \quad (I)$$

x	$-r$	r
y	$-$	$-$

$$[x] + [-x] + 1 \neq 0 \Rightarrow \begin{cases} 0 & x \in \mathbb{Z} \\ -1 & x \notin \mathbb{Z} \end{cases} \Rightarrow D = \mathbb{Z} \quad (II)$$

$$D_f = (I) \cap (II) = [-r, r]$$