

$$D_{\mathbb{R}} = \mathbb{R} - \{ \frac{1}{e}, 1 \}$$

$$D_f = R - \{ -1, -\frac{1}{4} \}$$

$$O_{\mathbb{P}} = \mathbb{R} - \{1\}$$

$$(I \cap V) =$$

$$\begin{aligned} \textcircled{1} \quad x \geq 1 & \rightarrow \text{I, } x^p - 0x + 0 - px + 0 = x^p - px + 1 \rightarrow (x-0)(x-p), \\ \textcircled{v} \quad x < 1 & \rightarrow \text{II, } x^p + 0x - 0 - px + 0 = x^p - px \rightarrow x(x-p), \end{aligned}$$

$$\textcircled{1} \cup \textcircled{4} \longrightarrow D_f = \mathbb{R} - \{ -\frac{p}{q}, 0, \frac{p}{q}, \infty \}$$

یکبار یاد

مثال $y = \sqrt{[-x] - p}$ $[-x] - p \geq 0 \longrightarrow [-x] \geq p \longrightarrow -x \geq p \longrightarrow x \leq -p$

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$$D_f = (-\infty, -p]$$

ب) $\frac{1}{x^2 + c}$ $[x]^2 - p[x] - q \neq 0$

$$[x]^2 - p[x] - q \quad ([x] - p, ([x] + 1)) \neq 0 \longrightarrow [x] \neq p - 1$$

$$[x] = p \longrightarrow x \in [p, p+1)$$

$$[x] = -1 \longrightarrow x \in [-1, 0)$$

$$\longrightarrow D_f = (-\infty, -1) \cup [0, p) \cup [p+1, +\infty)$$

مثال $y = \sqrt{[x - \frac{1}{p}] + [x + \frac{p}{p^2}]}$ $[x - \frac{1}{p}] + [x + \frac{p}{p^2}] \geq 0$

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$$[x - \frac{1}{p} + 1] + [x + \frac{p}{p^2}] \geq 1 \longrightarrow [x + \frac{p}{p^2}] - 1 \geq 0 \longrightarrow [x + \frac{p}{p^2}] \geq \frac{1}{p}$$

$$x + \frac{p}{p^2} \geq 1 \longrightarrow x \geq \frac{1}{p} \longrightarrow D_f = [\frac{1}{p}, +\infty)$$

ب) $y = \sqrt{[x - \frac{1}{p}] + [\frac{1}{p} - x]}$ $\longrightarrow z = x - \frac{1}{p}$

$$[z] + [-z] \longrightarrow \begin{cases} z \in \mathbb{Z} \longrightarrow 0 \\ z \notin \mathbb{Z} \longrightarrow -1 \end{cases} \longrightarrow \begin{cases} \text{مطلوب} \\ \text{مطلوب} \end{cases} \longrightarrow x \geq 0 \longrightarrow \text{مطلوب} (z \in \mathbb{Z} - \frac{1}{p})$$

$$x - \frac{1}{p} \in \mathbb{Z} \longrightarrow D_f = \{x \mid \frac{1}{p} + k \mid k \in \mathbb{Z}\}$$

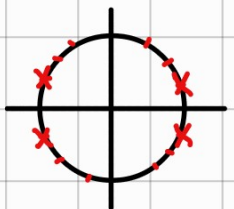
مثال $\frac{\cos x + 1}{\tan x + 1} \longrightarrow \begin{cases} \sin x \neq 0 \textcircled{1} \\ \tan x \neq -1 \textcircled{2} \end{cases}$

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$$D_f = \mathbb{R} - [\frac{k\pi}{4} \mid k\pi - \frac{\pi}{4}]$$

ب) $\sqrt{1 - 5 \sin^2 x}$ $1 - 5 \sin^2 x \geq 0 \longrightarrow 1 \geq 5 \sin^2 x \longrightarrow \frac{1}{5} \geq \sin^2 x \longrightarrow \frac{1}{\sqrt{5}} \geq \sin x \geq \frac{1}{\sqrt{5}}$



$$\longrightarrow D_f = [k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}] \cup [k\pi + \frac{3\pi}{4}, k\pi + \frac{7\pi}{4}]$$

مثال $\sqrt{5 \sin x - 1}$ $5 \sin x - 1 \geq 0 \longrightarrow \sin x \geq \frac{1}{5} \longrightarrow$

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$$D_f = [\frac{1}{5}k\pi + \frac{\pi}{9}, \frac{1}{5}k\pi + \frac{8\pi}{9}]$$

$$\text{دایب } y = \sqrt{1 - 4\cos x} \rightarrow 1 - 4\cos x \geq 0 \rightarrow \frac{1}{4} \geq \cos x$$

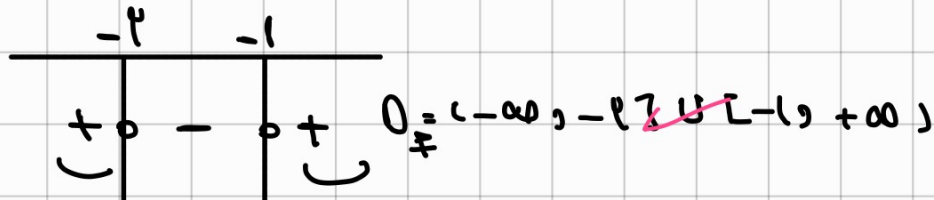
$$\left[4Kx + \frac{x}{4} = 4Kx - \frac{x}{4} \right] \quad \text{انتهای بازه نباید از ابتدای آن کوچکتر باشد!}$$

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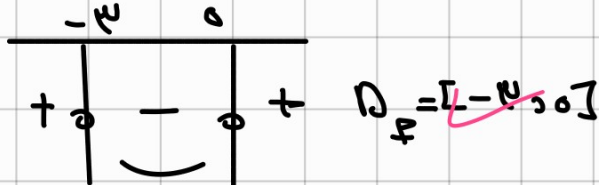
$$\text{دایب } y = \sin(x^2 + 3x + 1) \rightarrow -1 \leq x^2 + 3x + 1 \leq 1$$

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$$\textcircled{1} -1 \leq x^2 + 3x + 1 \rightarrow 0 \leq x^2 + 3x + 2 \rightarrow 0 \leq (x+1)(x+2)$$



$$\textcircled{2} x^2 + 3x + 1 \leq 1 \rightarrow x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0 \rightarrow 0 \geq -x$$



$$\textcircled{1} \cap \textcircled{2} \rightarrow D_F = [-3, -2] \cup [-1, 0]$$

$$\text{دایب } y = \sqrt{5 - 2x}$$

$$\textcircled{1} 5 - 2x \geq 0 \rightarrow x \leq \frac{5}{2}$$



$$\textcircled{2} -\sqrt{5 - 2x} \leq 1 \rightarrow 5 - 2x \leq 1 \rightarrow x \geq 2$$

$$\textcircled{1} \cap \textcircled{2} \rightarrow [2, \frac{5}{2}]$$

$$\text{دایب } y = \log_{\frac{x}{4}}(1 - \log_{\frac{x}{4}})$$

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$$\textcircled{1} x > 0 \quad \textcircled{2} 1 - \log_{\frac{x}{4}} > 0 \rightarrow 1 > \log_{\frac{x}{4}} \rightarrow \frac{x}{4} > x$$

$$\textcircled{1} \cap \textcircled{2} \rightarrow D_F = (0, \frac{1}{4})$$

$$\text{دایب } y = \log_{\frac{x}{4}}(1 - \log_{\frac{x}{4}}) \rightarrow \textcircled{1} x > 0$$

$$\textcircled{2} 1 - \log_{\frac{x}{4}} > 0 \rightarrow 1 > \log_{\frac{x}{4}} \rightarrow \frac{1}{4} > x$$

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$$\log_{\frac{1}{4}} \frac{1}{4} < 1 \rightarrow x > \frac{1}{4} \rightarrow D_F = (\frac{1}{4}, +\infty) \quad D_F = (0, \frac{1}{4})$$

چون متناهی است و ثابت نامداره محسوب می شود

$$\sqrt{r^x - x^r} - 1 \rightarrow r^x - x^r - 1 \geq 0 \rightarrow r^x \geq x^r + 1 \rightarrow \log_r r^x \geq \log_r (x^r + 1) \quad -10$$

$$r^x - x^r \geq 1 \rightarrow x^r - r^x + 1 \rightarrow (x-1), x-r \leq 0$$

$$\begin{array}{c} + \quad | \quad - \quad | \quad + \\ \hline 0 \end{array} \quad D_f = [1, r]$$

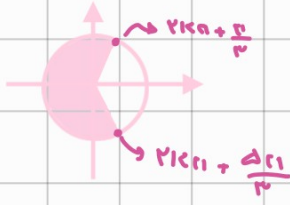
$$\Rightarrow y = \left(\frac{rx + 1}{rx + r} \right)! \rightarrow \frac{rx + 1}{rx + r} \in W \rightarrow x = \frac{rW - 1}{-rW + r}$$

$$\{x \mid x = \frac{rK - 1}{r - rK}, (K \in W)\}$$

$$r - \text{ب}) \quad \frac{x+r}{x^r - rx^r + rx - 1} \geq 0 \rightarrow \frac{x+r}{(x-1)(x^r - x + 1)} \geq 0$$

(مشتق من $x=1$) ریشه ندارد! $\Delta < 0$

$$\begin{array}{c} -r \quad 1 \\ + \quad | \quad - \quad | \quad + \end{array} \rightarrow D_f = (-\infty, -r] \cup (1, +\infty)$$

$$v - \text{ب}) \quad 1 - r \cdot \sin \geq 0 \rightarrow \sin \leq \frac{1}{r} \rightarrow D_f = [rkn + \frac{\pi}{r}, rkn + \frac{\pi}{r}]$$


$$9 - \text{ب}) \quad y = \log_r \left(1 - \log_{\frac{1}{r}} \right) \rightarrow \log_{\frac{1}{r}} \rightarrow n > 0$$

$$\hookrightarrow 1 - \log_{\frac{1}{r}} > 0 \rightarrow \log_{\frac{1}{r}} < 1 \xrightarrow{\text{مناسب}} n > \frac{1}{r}$$

مناسب $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$$D_f = \left(\frac{1}{r}, +\infty \right)$$