

$$\text{c) } y = \frac{x+\mu}{\mu x^{\mu} + \mu x^{\mu} - \lambda x + \mu} - \frac{\mu x^{\mu} + \mu x^{\mu} - \lambda x + \mu}{\mu x^{\mu} - \mu x^{\mu}} \quad \left| \frac{x-1}{\frac{-\mu}{\mu}} \right| \leftarrow (x+\mu, (x-1), -1$$

$$\mu + \mu - \lambda + \mu = 0 \quad \frac{0 x^{\mu} - \lambda x + \mu}{0 x^{\mu} - 0 x} \quad \frac{\mu x^{\mu} + 0 x - \mu}{(x-1)(x+\mu), (x-\frac{1}{\mu})}$$

$$\mathbb{R} - \{ -\mu, \frac{1}{\mu}, 1 \} \quad \frac{-\mu x + \mu}{-\mu x + \mu} \quad \downarrow$$

$$\lim_{x \rightarrow 1} = 1, -\mu, \frac{1}{\mu}$$

$$b) y = \frac{x + \mu}{\mu x^{\mu} + 9x^{\mu} + 10x + \mu} - \frac{\mu x^{\mu} + 9x^{\mu} + 10x + \mu}{\mu x^{\mu} + \mu x^{\mu}} \quad (x+1) \subset (x+\mu),$$

$$\mu + 10 = 9 + \mu$$

$$\frac{\mu x^{\mu} + 9x^{\mu} + 10x + \mu}{\mu x^{\mu} + \mu x^{\mu}} = \frac{\mu x^{\mu} + \mu x^{\mu}}{\mu x^{\mu} + \mu x^{\mu}} = 1$$

$$\frac{1}{\mu} + \frac{10}{\mu} = \frac{11}{\mu}$$

$$D_f = \mathbb{R} - \{ -1, -\mu, -\frac{1}{\mu} \}$$

$$(x+1, (x + \frac{1}{\mu}) \subset (x+\mu),$$

$$\text{Wkt } g = \frac{x+p}{x^p - px^{p-1} + px - 1} \quad \begin{array}{l} x^p - px^{p-1} + px - 1 \mid x-1 \\ \underline{-x^p + x^{p-1}} \\ x^{p-1} - 1 \\ \underline{-x^{p-1} + x^{p-2}} \\ x^{p-2} - 1 \\ \vdots \\ \underline{-x + 1} \\ 0 \end{array} \quad \begin{array}{l} x^p - x + 1 \rightarrow \Delta = b^p - p a c = 1 - p < 0 \\ \text{also } \hat{m}_2 \leftarrow \Delta < 0 \\ (x-b) \rightarrow 1 \end{array}$$

$\therefore y = \sqrt{\frac{x+n}{x^2 - px^p + qx - 1}}$

$\frac{x+n}{x^2 - px^p + qx - 1} \geq 0$

$x+n \geq 0 \rightarrow x \geq -n \quad (I)$

$\Delta \leq 0$
 $x-1 \geq 0 \rightarrow x \geq 1 \quad (II)$

$(I \cap II) =$



$$\frac{p}{x^p - \omega |x-1| - px + \omega} \quad x^p - \omega |x-1| - px + \omega \neq 0$$

$$\textcircled{1} \quad x \geq 1 \rightarrow I: x^p - Qx + Q - p + Q = x^p - px + 1 \rightarrow (x-Q)(x-p)$$

⑤ $x < 1 \rightarrow \text{II}, x^p + 0x - 0 - px + 0 = x^p + px \rightarrow x(x + p)$

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

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

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

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

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

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

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

$$\text{مثال } y = \sqrt{\left[x - \frac{1}{p}\right] + \left[x + \frac{p}{p}\right]} \quad \left[x - \frac{1}{p}\right] + \left[x + \frac{p}{p}\right] \geq 0$$

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$$\left[x - \frac{1}{p} + 1\right] + \left[x + \frac{p}{p}\right] \longrightarrow \left[x + \frac{p}{p}\right] - 1 \geq 0 \longrightarrow \left[x + \frac{p}{p}\right] \geq 1$$

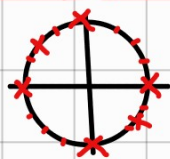
$$x + \frac{p}{p} \geq 1 \longrightarrow x \geq \frac{1}{p} \longrightarrow D_f = \left[\frac{1}{p}, +\infty\right)$$

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

$$\begin{aligned} [z] + [-z] &\longrightarrow \begin{cases} z \in \mathbb{Z} \longrightarrow 0 \\ z \notin \mathbb{Z} \longrightarrow -1 \end{cases} \longrightarrow \begin{cases} \text{مثال } 1, \frac{1}{2}, \dots \longrightarrow x \geq 0 \longrightarrow \text{مثال } \frac{1}{2}, \frac{1}{3}, \dots (z \in \mathbb{Z} - \frac{1}{2}) \end{cases} \end{aligned}$$

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

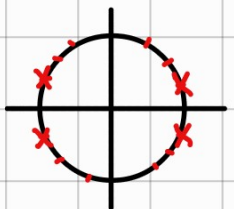
$$\text{مثال } \frac{\cos x + 1}{\tan x + 1} \longrightarrow \begin{aligned} \cos x + 1 &\neq 0 \quad \textcircled{1} \\ \tan x + 1 &\neq 0 \quad \textcircled{2} \end{aligned}$$



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$$D_f = \mathbb{R} - \left[\frac{\pi}{2}, \frac{3\pi}{2}\right]$$

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



$$\longrightarrow D_f = \left[\frac{\pi}{2}, \frac{3\pi}{2}\right] \cup \left[\frac{\pi}{2}, \frac{3\pi}{2}\right]$$

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

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$$D_f = \left[\frac{\pi}{2}, \frac{3\pi}{2}\right] \cup \left[\frac{\pi}{2}, \frac{3\pi}{2}\right]$$

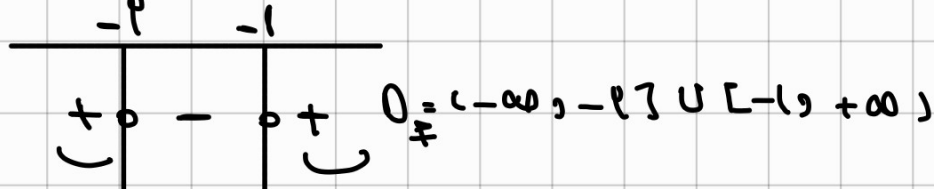
ب) $y = \sqrt{1 - 4\cos x} \rightarrow 1 - 4\cos x \geq 0 \rightarrow \frac{1}{4} \geq \cos x$

$\left[4\cos x + \frac{1}{4} = 4\cos x - \frac{1}{4} \right]$

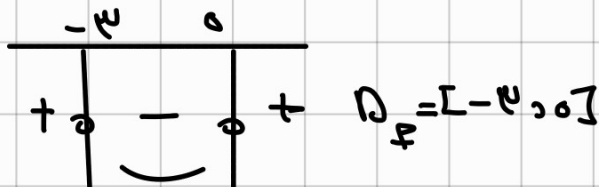
ب) $\sin(x^2 + 4x + 1) \rightarrow -1 \leq x^2 + 4x + 1 \leq 1$

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① $-1 \leq x^2 + 4x + 1 \rightarrow 0 \leq x^2 + 4x + 2 \rightarrow 0 \leq (x+1)(x+2)$



② $x^2 + 4x + 1 \leq 1 \rightarrow x^2 + 4x \leq 0 \rightarrow x(x+4) \leq 0 \rightarrow 0 \geq -x$



① ∩ ② $\rightarrow D_F = [-4, -2] \cup [-1, 0]$

ب) $\cos y = \sqrt{5 - 2x}$

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



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

① ∩ ② $\rightarrow [2, \frac{5}{2}]$

ب) $y = \log_{\frac{1}{2}}(1 - \log_{\frac{1}{2}} x)$

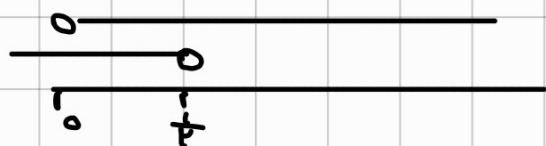
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① $x > 0$ ② $1 - \log_{\frac{1}{2}} x > 0 \rightarrow 1 > \log_{\frac{1}{2}} x \rightarrow \frac{1}{2} > x$

① ∩ ② $\rightarrow D_F = (0, \frac{1}{2})$

ب) $y = \log_{\frac{1}{2}}(1 - \log_{\frac{1}{2}} x)$ ① $x > 0$

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



$D_F = (0, \frac{1}{2})$

$$\text{دالف } \sqrt{p^{F_x - x^p} - 1} \rightarrow p^{F_x - x^p} - 1 \geq 0 \rightarrow p^{F_x - x^p} \geq 1 \rightarrow \log_p p^{F_x - x^p} \geq \log_p 1 \quad \text{ـ 10}$$

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

$$\begin{array}{c} \text{+} \quad \text{0} \quad \text{--} \quad \text{0} \quad \text{+} \\ \text{---} \end{array} \quad \text{0} \notin [1, p]$$

$$\Rightarrow g = \left(\frac{px + q}{px + p} \right)! \rightarrow \frac{px + q}{px + p} \in W \rightarrow x = \frac{FW - q}{-pW + p}$$

$$\{x \mid x = \frac{FK - q}{p - pK}, (K \in W)\}$$