

الف) $2x^3 + 3x^2 - 1x + 3 \neq 0 \rightarrow (x-1)(2x^2 + 5x - 3) \neq 0$
 $\rightarrow (x-1)(2x-1)(x+3) \neq 0$

$D_f = \mathbb{R} - \left\{ \frac{1}{2}, 1, -3 \right\}$

ب) $2x^3 + 9x^2 + 10x + 3 \neq 0$

$(x+1)(2x^2 + 7x + 3) \neq 0 \rightarrow (x+1)(2x+1)(x+3) \neq 0$

$D_g = \mathbb{R} - \left\{ -3, -\frac{1}{2}, -1 \right\}$

الف) $x^3 - 2x^2 + 2x - 1 \neq 0 \rightarrow (x-1)(x^2 - x + 1) \rightarrow (x-1)(x^2 - x + 1) \neq 0$
 ← روش تار

$D_g = \mathbb{R} - \{1\}$

ب) $\frac{x+3}{x^3 - 2x^2 + 2x - 1} > 0$ $\frac{-3 \quad 1}{+ \quad - \quad +}$ $D_g = (-\infty, -3] \cup (1, +\infty)$
 $(x-1)(x^2 - x + 1)$

$y = x^2 - 5|x-1| - 2x + 5 \neq 0$

$D_g = \mathbb{R} - \{-3, 0, 2, 5\}$

$x < 1$	$x \geq 1$
$x^2 + 5x - 5 - 2x + 5 = 0$ $x^2 + 3x = 0$ $x(x+3) = 0$ $x = 0, -3$	$x^2 - 5x + 5 - 2x + 5 = 0$ $x^2 - 7x + 10 = 0$ $(x-2)(x-5) = 0$ $x = 2, 5$

$|2x+1| - |x+3| \neq 0 \rightarrow 2x^2 + 2x + 1 \neq x^2 + 6x + 9$
 $|2x+1| \neq |x+3| \rightarrow 2x^2 - 2x - 1 \neq 0 \rightarrow (x-2)(x+\frac{1}{2}) \neq 0$

$x \neq -\frac{1}{2}, 2 \quad \mathbb{R} - \left\{ -\frac{1}{2}, 2 \right\}$

$\Rightarrow |2x^2+1| - |x+3| > 0 \quad |2x^2+1| > |x+3| \quad D_g = (-\infty, -\frac{1}{2}] \cup [2, +\infty)$
 $2x^2 + 2x + 1 > x^2 + 6x + 9 \quad 2x^2 - 2x - 1 > 0 \quad \frac{-1 \quad 2}{+ \quad - \quad +}$

الف) $y = \log_r(1 - \log_{\frac{1}{r}} x) \rightarrow x > 0$
 $1 - \log_{\frac{1}{r}} x > 0 \rightarrow \log_{\frac{1}{r}} x < 1 \Rightarrow x < r \Rightarrow (0, r)$

ب) $x > 0$ (I)

$1 - \log_{\frac{1}{r}} x > 0$

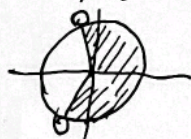
$\log_{\frac{1}{r}} x < 1 \rightarrow x > \frac{1}{r}$

(I) (II) $D_g = (\frac{1}{r}, +\infty)$

$$\log_{\frac{1}{10}} (\log_{\frac{1}{10}} (r^{n-1})) \rightarrow r^{n-1} > 0 \quad r^{n-1} > \frac{1}{r} \quad \log_{\frac{1}{10}} r^{n-1} < 1 \quad D_y = (1, r]$$

$$\log_{\frac{1}{10}} r^{n-1} > 0 \quad r^{n-1} > 1 \quad r^n > r \quad n > 1 \quad r^{n-1} < \frac{1}{r} \quad r^n \leq r \quad n \leq 2$$

$$\text{ج) } y = \log(r \cos x + 1) \quad r \cos x > -1 \quad \cos x > -\frac{1}{r}$$



$$(r k \pi - \frac{r \pi}{r}, r k \pi + \frac{r \pi}{r}) = D_y$$

$$\text{د) } y = \sqrt{\log \frac{x-1}{x+1}} \quad \frac{x-1}{x+1} > 0 \quad \frac{-1}{x+1} > 0 \quad (-\infty, -1) \cup (1, +\infty) \quad \text{I} \cap \text{II} \rightarrow (-\infty, -1)$$

$$\log \frac{x+1}{x-1} > 0 \rightarrow \frac{x-1}{x+1} > 1 \quad \frac{x-1}{x+1} - 1 > 0 \quad \frac{-2}{x+1} > 0 \quad \frac{-1}{x+1} > 0 \quad \frac{-1}{x+1} > 0$$

$$f(x) = \sqrt{(a+r)x^2 + ax + b} \quad D_f = (-\infty, r] \quad \frac{r}{x+1}$$

$$\theta = x^2 \text{ مفرج} \rightarrow a+r=0 \quad a=-r \rightarrow -r^2 + b = 0 \quad -r(\frac{r}{x+1}) + b = 0 \quad b = r^2$$

$$f(x) = \sqrt{x^2 + rx + r - m^2}$$

$$\begin{cases} a > 0 \rightarrow 1 > 0 \\ \Delta \leq 0 \end{cases} \quad r - f(r-m^2) \leq 0 \rightarrow r - 1 + fm^2 \leq 0 \quad -r + rm^2 \leq 0 \quad fm^2 \leq r \quad m^2 \leq 1 \quad -1 \leq m \leq 1$$

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

$$[x] + [-x] \neq -1 \rightarrow \begin{cases} [x] + [-x] = 0 \rightarrow x \in \mathbb{Z} \\ [x] + [-x] = -1 \rightarrow x \notin \mathbb{Z} \end{cases} \quad \text{II}$$

$$\text{I} \cap \text{II} \rightarrow D_f = \{-\sqrt{r}, -1, 0, 1, \sqrt{r}\}$$