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الف) $y = \frac{x+3}{2x^3+3x^2-11x+3} \rightarrow 2x^3+3x^2-11x+3 \neq 0 \Rightarrow (x-1)(2x^2+5x-3) \neq 0$

$(\frac{x-1}{1})(\frac{2x^2+5x-3}{\frac{1}{2}}) \neq 0 \Rightarrow D = \mathbb{R} - \{-3, \frac{1}{2}, 1\}$

ب) $y = \frac{x+3}{2x^3+9x^2+10x+3} \rightarrow 2x^3+9x^2+10x+3 \neq 0 \Rightarrow (x+1)(2x^2+7x+3) \neq 0$

$(\frac{x+1}{-1})(\frac{2x^2+7x+3}{\frac{1}{2}}) \neq 0 \Rightarrow D = \mathbb{R} - \{-3, -1, -\frac{1}{2}\}$

ج) $2x^3-2x^2+2x-1 \neq 0 \Rightarrow (x-1)(2x^2-x+1) \neq 0 \Rightarrow D = \mathbb{R} - \{1\}$

د) $\frac{x+3}{(x-1)(2x^2-x+1)} \geq 0 \Rightarrow \frac{-3}{+ \quad - \quad +} \Rightarrow D = (-\infty, 1] \cup (1, +\infty)$

ه) $\frac{x}{x^2-\Delta|x-1|-2x+\Delta} \Rightarrow \frac{x}{x^2+3x} \mid \frac{x^2-2x+10}{x^2-2x+10} \Rightarrow D = \mathbb{R} - \{-3, 0, 2, \Delta\}$

و) $|2x+1| - |x+3| \neq 0 \rightarrow |2x+1| \neq |x+3| \xrightarrow{\text{I O K}} 2x^2+4x+1 \neq x^2+6x+9 \Rightarrow 3x^2-2x-8 \neq 0 \Rightarrow (x-4)(3x+2) \neq 0 \Rightarrow D = \mathbb{R} - \{-\frac{2}{3}, 4\}$

ز) $|2x+1| - |x+3| \geq 0 \rightarrow |2x+1| \geq |x+3| \xrightarrow{\text{I O K}} 3x^2-2x-8 \geq 0 \Rightarrow (x-4)(3x+2) \geq 0 \Rightarrow D = (-\infty, -\frac{2}{3}] \cup [4, +\infty)$

Q1) $y = \log_r(1 - \log_r^n)$ $\Rightarrow$ 1) $n > 0$ 2) $\log_r^n < 1 \Rightarrow n < r$ $D = (0, r)$ -2

ب) $y = \log_r(1 - \log_{\frac{1}{r}}^n)$ $\Rightarrow$ 1) $n > 0$ 2) $\log_{\frac{1}{r}}^n < 1 \xrightarrow{0 < b < 1} n > \frac{1}{r} \Rightarrow D = (\frac{1}{r}, +\infty)$

$f(x) = \sqrt{\log_a \log_a (r^{n-1})}$ $\Rightarrow$ ① $r^{n-1} > 0$ ② $\log_a (r^{n-1}) > 0$ $\Rightarrow D = (1, r)$ -4
 $\log_a \log_a (r^{n-1}) > 0 \xrightarrow{0 < b < 1} \log_a (r^{n-1}) > 1 \Rightarrow r^{n-1} > a \Rightarrow n > 1$
 $\log_a \log_a (r^{n-1}) < 0 \Rightarrow \log_a (r^{n-1}) < 1 \Rightarrow r^{n-1} < a \Rightarrow n < r$

Q2) $y = \log(r \cos x + 1)$ $\Rightarrow r \cos x + 1 > 0 \Rightarrow \cos x > -\frac{1}{r}$  $D = [rkr - \frac{r}{r}, rkr + \frac{r}{r}]$ -5

ب) $y = \sqrt{\log \frac{n-1}{n+1}}$ $\Rightarrow$ ① $\frac{n-1}{n+1} > 0$ $\frac{-1}{+} - \frac{1}{+} \rightarrow (-\infty, -1) \cup [1, +\infty)$

② $\log \frac{n-1}{n+1} \geq 0 \Rightarrow \frac{n-1}{n+1} \geq 1 \Rightarrow \frac{n-1-n-1}{n+1} \geq 0 \Rightarrow \frac{-2}{n+1} \geq 0$

$n+1 < 0 \Rightarrow n < -1$ $D = (-\infty, -1)$

$1 - 4b \geq 0 \Rightarrow (x-2)^2 \Rightarrow x^2 - 4x + 4 \Rightarrow a+x = 1$ $\left. \begin{matrix} a+x=1 \\ a=-1 \end{matrix} \right\} x^2 - x + b$ $D_f = (-\infty, r]$ -6

$x = r$
 $\delta = 0 \rightarrow \sqrt{-4+b} = 0 \rightarrow b-4=0 \Rightarrow b = 4$
 $f(x) = \sqrt{-x+b}$

$f(x) = \sqrt{x^2 + rx + r - m^2} = \sqrt{(x+1)^2 + 1 - m^2}$ if $n = -1 \rightarrow f(x) = \sqrt{1 - m^2}$ -7
 $\Rightarrow 1 - m^2 \geq 0 \Rightarrow -1 \leq m \leq 1 \Rightarrow 1 - (-1) = 2$

$\sqrt{f-x^2}$ ① $[n] + [-n] \neq -1 \Rightarrow$ $\begin{cases} \text{if } n \in \mathbb{Z} \Rightarrow [n] + [-n] = 0 \checkmark \\ \text{if } n \notin \mathbb{Z} \Rightarrow [n] + [-n] = -1 \times \end{cases}$ -8

② $f-x^2 \geq 0 \Rightarrow x^2 \leq f \Rightarrow -\sqrt{f} \leq x \leq \sqrt{f}$
 $\Rightarrow D = [-\sqrt{f}, \sqrt{f}] \in \mathbb{Z} \Rightarrow -2, -1, 0, 1, 2$ $\{x \in \mathbb{Z}\}$