

الف) $y = \frac{x+3}{2x^3+3x^2-18x+3} \xrightarrow{\div x-1} = \frac{x+3}{(x-1)(2x^2+5x-3)} \Rightarrow Df = R - \{-\frac{3}{2}, \frac{1}{2}\}$	۱
ب) $y = \frac{x+3}{2x^3+3x^2+10x+3} \xrightarrow{\div x+1} = \frac{x+3}{(x+1)(2x^2+7x+3)} \Rightarrow Df = R - \{-3, -1, -\frac{1}{2}\}$ $ac \rightarrow x^2+7x+3 = (x+4)(x+1) = \frac{-9}{4}, -\frac{1}{4}$	۱
الف) $\frac{x+3}{x^3-2x^2+2x-1} \xrightarrow{\div x-1} = \frac{x+3}{(x-1)(x^2-x+1)} \Rightarrow Df = R - \{1\}$	۲
ب) $\sqrt{\frac{x+3}{x^3-2x^2+2x-1}} \geq 0 \Rightarrow \frac{x+3}{(x-1)(x^2-x+1)} \geq 0 \Rightarrow \frac{-3}{x-1} \geq 0 \Rightarrow Df = (-\infty, -3] \cup (1, +\infty)$	۲
$y = \frac{r}{x^2-5 x-1 -2x+5} \xrightarrow{if} \begin{cases} x \geq 1 \rightarrow x^2-5x+5-2x+5 = x^2-7x+10 = (x-5)(x-2) \\ x < 1 \rightarrow x^2+5x-5-2x+5 = x^2+3x = x(x+3) \end{cases}$ $I = (x-2)(x-5) = 0 \Rightarrow x = 2, 5$ $II = x^2+3x = 0 \Rightarrow x = 0, -3$ $Df = R - \{-3, 0, 2, 5\}$	۳
الف) $y = \frac{x+3}{ 2x+1 - x+3 } \neq 0 \Rightarrow 2x+1 - x+3 = 0$ $ 2x+1 = x+3 \Rightarrow \begin{cases} 2x+1 = x+3 \Rightarrow x=2 \\ 2x+1 = -(x+3) \Rightarrow x=-\frac{4}{3} \end{cases}$ $Df = R - \{-\frac{4}{3}, 2\}$ $Df = (-\infty, -\frac{4}{3}] \cup (2, +\infty)$	۴
الف) $y = \log_r(1-\log_r^x)$ $1-\log_r^x > 0 \Rightarrow 1 > \log_r^x \Rightarrow r^1 > x \Rightarrow x < r$ $x > 0 \Rightarrow I \cap II = (0, r)$	۵
ب) $\log_r(1-\log_r^{\frac{1}{r}})$ $1-\log_r^{\frac{1}{r}} > 0 \Rightarrow 1 > \log_r^{\frac{1}{r}} \Rightarrow \frac{1}{r} < x$ $Df = (\frac{1}{r}, +\infty)$	۵

$$y = \sqrt{\log_{10} \log_{10}^{(xy-1)}}$$

$$xy-1 > 0 \Rightarrow xy > 1 \Rightarrow \boxed{xy > \frac{1}{x}} \text{ I}$$

$$\log_{10}^{xy-1} y_0 \Rightarrow xy-1 > 1 \Rightarrow xy > 2 \Rightarrow \boxed{xy > 1} \text{ II}$$

$$\log_{10} \log_{10}^{(xy-1)} y_0 \Rightarrow \log_{10}^{(xy-1)} \leq 1 \Rightarrow xy-1 \leq 10$$

Intersection

$$I \cap II \cap III = \emptyset \Rightarrow \text{Graph} \Rightarrow Df = (1, 3] \quad \checkmark \quad xy \leq y \Rightarrow \boxed{xy \leq 3} \text{ III}$$

$$\text{الف) } y = \log_r(\cos x + 1) \rightarrow a$$

$$a y_0 \Rightarrow r(\cos x + 1) y_0 \Rightarrow r \cos x y - 1 \Rightarrow \cos x y > \frac{1}{r}$$



$$\Rightarrow Df = R - [rkR + R - \frac{R}{r}, rkR + R + \frac{R}{r}] \quad \checkmark$$

$$\text{ب) } y = \sqrt{\log_{\frac{x-1}{x+1}}}$$

$$\rightarrow \frac{x-1}{x+1} y_0 \Rightarrow \frac{-1}{+1} \frac{1}{+1} \frac{1}{+1}$$

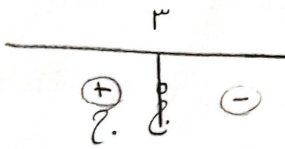
$$\text{II} \quad (-\infty, -1) \quad \checkmark$$

$$\log_{\frac{x-1}{x+1}} y_0 \Rightarrow \frac{x-1}{x+1} y_1$$

$$\text{* I} \quad III = (-\infty, -1) \quad \checkmark \quad I \quad (-\infty, -1) \cup (1, +\infty) \quad \text{II}$$

$$f(x) = \sqrt{(a+r)x^r + ax + b} y_0 \rightarrow$$

$$Df = (-\infty, r]$$



نفسه

$$ay + b \Rightarrow -r(r) + b = 0 \Rightarrow b = r \quad \checkmark \quad \leftarrow a = -r$$

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

است

$$\Delta = b^r - 4ac \rightarrow \varepsilon - \varepsilon(1)(r - m^r) = \varepsilon - 1 + \varepsilon m^r = -\varepsilon + \varepsilon m^r > 0$$

$$\varepsilon m^r < \varepsilon \Rightarrow m^r < 1 \rightarrow \frac{-1}{\min} < m < \frac{1}{\max} \Rightarrow \underline{1 - (-1) = 2} \quad \checkmark \quad \text{جواب}$$

$$f(x) = \frac{\sqrt{\varepsilon - x^r}}{[x] + [-x] + 1} \rightarrow \neq 0$$

$$[x] + [-x] \begin{cases} y \in Z = 0 \\ y \notin Z = -1 \end{cases} \Rightarrow [x] + [-x] + 1 \text{ if } \begin{cases} y \in Z = 1 \\ y \notin Z = 0 \end{cases} \Rightarrow \boxed{y \in Z} \text{ I}$$

$$\sqrt{\varepsilon - x^r} y_0 \Rightarrow r - y^r y_0 \rightarrow \varepsilon y, y^r \rightarrow \boxed{-r, r y \leq r} \text{ II} \Rightarrow I \cap II \Rightarrow Df = \{-r, -1, 0, r\} \quad \checkmark$$

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