

الف) $\frac{x+3}{(x-1)(x+3)(2x-1)}$ $\rightarrow x=3$ ب) $\frac{x+3}{(x+1)(x+3)(2x+1)}$ $\rightarrow x=-3$	$x = \begin{cases} -3 \\ 1 \\ \frac{1}{2} \end{cases} \Rightarrow Df = R - \{-3\} - \{\frac{1}{2}\} - \{1\}$ $x = \begin{cases} -3 \\ -1 \\ -\frac{1}{2} \end{cases} \Rightarrow Df = R - \{-3\} - \{-1\} - \{-\frac{1}{2}\}$ ۱,۷۵	۱
الف) $\frac{x+3}{(x-1)(x^2-x+1)}$ $\rightarrow x=1$ ب) $\frac{x+3}{x^3-2x^2+5x-1} \geq 0 \rightarrow \frac{x+3}{(x-1)(x^2-x+1)}$ $\Rightarrow Df = (-\infty, 0] \cup (1, +\infty)$	$\Rightarrow Df = R - \{1\}$ ۱,۷۵ Sign chart: $\frac{-}{+} \mid \frac{+}{-} \mid \frac{+}{+}$	۲
$x^2 - \omega(x-1) - 2x + \omega$ if $x > 1 \Rightarrow x^2 - \omega x + \omega - 2x + \omega \rightarrow x^2 - 2x + 2\omega \rightarrow (x-1)(x-1)$ if $x < 1 \Rightarrow x^2 + \omega x - \omega - 2x + \omega \rightarrow x^2 - 2x \rightarrow x(x-2)$ $\Rightarrow Df = R - \{-3\} - \{0\} - \{2\} - \{\omega\}$	۵	۳
الف) $2x+1 = x+3 \rightarrow (2x+1)^2 = (x+3)^2 \Rightarrow 2x+1 = x+3$ $4x^2 + 4x + 1 \neq x^2 + 6x + 9 \rightarrow (x-4)(x+5) \neq 0$ $x \neq 4, -\frac{5}{2}$ ب) $2x+1 - x+3 \geq 0 \rightarrow 2x+1 \geq x+3 \rightarrow (2x+1)^2 \geq (x+3)^2$ $2x+1 \geq x+3 \rightarrow x \geq 2 \rightarrow Df = [2, +\infty)$ $Df = (-\infty, -\frac{4}{3}] \cup [2, +\infty)$	$\Rightarrow x=2$ $\Rightarrow Df = R - \{2\}$ ۷۵	۴
الف) $\log_2(1 - \log_2 x)$ $\rightarrow x > 0$ $1 - \log_2 x > 0 \rightarrow \log_2 x < 1 \rightarrow x < 2$ ب) $x > 0$ $1 - \log_2 \frac{1}{x} > 0 \rightarrow -\log_2 \frac{1}{x} > -1 \rightarrow \log_2 \frac{1}{x} < 1$ $\Rightarrow x < \frac{1}{2}$ $\Rightarrow x < \frac{1}{2}$ $\rightarrow 0 < x < \frac{1}{2} \Rightarrow (0, \frac{1}{2})$	$Df = (0, \frac{1}{2})$ ۱,۵	۵

$$rx - 1 > 0 \rightarrow rx > 1 \rightarrow \underline{x > \frac{1}{r}}$$

$$rx - 1 > 1 \rightarrow x > 1$$

$$rx - 1 < 0 \rightarrow x < \frac{1}{r}$$

$$\log_{0.10}(\log(rn-1))$$

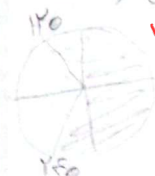
$$\log_{0.10} > 0 \Rightarrow \log_{0.10}(rn-1) < 0 \Rightarrow rn-1 < \frac{1}{r_0}$$

$$\Rightarrow rn \leq \frac{r_0}{r_0} \Rightarrow x \leq \frac{r_0}{r_0}$$

$$\Rightarrow \frac{1}{r} < x \leq \frac{r_0}{r_0} \rightarrow D_f = (\frac{1}{r}, \frac{r_0}{r_0}]$$

$$D_f = (1, r_0]$$

$$(r \cos x + 1) > 0 \rightarrow r \cos x > -1 \rightarrow \cos x > -\frac{1}{r}$$



$$\Rightarrow D_f = \{x \in \mathbb{R} \mid x \in [-\arccos(1/r), \arccos(1/r)]\}$$

$$(5)$$

$$\log \frac{x-1}{x+1} > 0 \quad \frac{x-1}{x+1} > 0 \Rightarrow \frac{-1}{+} \quad \Rightarrow (-\infty, -1) \cup [1, +\infty) \quad (1)$$

$$\frac{x-1}{x+1} > 1 \rightarrow \frac{x-1-x-1}{x+1} > 0 \rightarrow \frac{-2}{x+1} > 0 \Rightarrow (-\infty, -1) \quad (2) \quad (1) \cap (2) \Rightarrow D_f = (-\infty, -1)$$

$$(a+r)x^r + ax + b \geq 0$$

$$\text{if } x=1 \rightarrow a+r+a+b \rightarrow r+a+b+r \geq 0$$

$$\text{if } x=0 \rightarrow b \geq 0 \quad (1) \quad 1 \cap 2 \rightarrow b = [0, +\infty)$$

$$\text{if } x=2 \rightarrow a+r+a+b \rightarrow 4a+b+r \geq 0$$

$$\text{if } x=-1 \rightarrow a+r-a+b \geq 0 \rightarrow b \geq -r \quad (2)$$

$\Rightarrow$

این تابع همواره مثبت است
 $a > 0 \quad \Delta_0 \leftarrow$

$$(5)$$

$$-x^r \geq 0 \Rightarrow x \geq x^r \Rightarrow r \geq |x| \rightarrow -r \leq x \leq r \quad (1)$$

$$(1, \sqrt{5})$$

$$[x] + [-x] + 1 \neq 0 \quad \text{if } x > 0 \quad \text{QOE}$$

$$[x] + [-x] = 0 \rightarrow x + (-x) = 0 \quad \checkmark$$

$$\hookrightarrow \{0\} \quad (2) \quad \text{if } x=0 \quad \checkmark \quad \text{QOE}$$

$$[x] + [-x] = -1 \rightarrow -1 + 1 = 0 \quad \times$$

$$\text{if } x < 0 \quad \text{QOE}$$

$$\hookrightarrow D_f = \mathbb{Z}$$

$$(1) \cap (2) \Rightarrow D_f = \{0\}$$

$$D_f = \{-r, -1, 0, 1, r\}$$