

الف) $\frac{x+3}{(x-1)(x+3)(x-1)} \rightarrow x=3$ ب) $\frac{x+3}{(x+1)(x+3)(x+1)} \rightarrow x=-3$	$x = \begin{cases} -3 \\ 1 \\ \frac{1}{x} \end{cases} \Rightarrow Df = R - \{-3\} - \{1\} - \{\frac{1}{x}\}$ $x = \begin{cases} -3 \\ -1 \\ -\frac{1}{x} \end{cases} \Rightarrow Df = R - \{-3\} - \{-1\} - \{-\frac{1}{x}\}$	1
الف) $\frac{x+3}{(x-1)(x^2-x+1)} \rightarrow x=3$ ب) $\frac{x+3}{x^3-2x^2+x-1} \rightarrow x=1$	$\Rightarrow Df = R - \{1\}$ $\Rightarrow Df = (-\infty, 3] \cup (1, +\infty)$ -3 1 + - +	2
$x^2 - 5 x-1 - 2x + 5$ if $x \geq 1 \Rightarrow x^2 - 5x + 5 - 2x + 5 \rightarrow x^2 - 7x + 10 \rightarrow (x-2)(x-5) \Rightarrow x=2, 5$ if $x < 1 \Rightarrow x^2 + 5x - 5 - 2x + 5 \rightarrow x^2 + 3x \rightarrow x=0, -3$	$\Rightarrow Df = R - \{-3\} - \{0\} - \{2\} - \{5\}$	3
الف) $2x+1 = x+3 \rightarrow (2x+1)^2 = (x+3)^2 \Rightarrow 2x+1 = x+3 \Rightarrow x=2$ ب) $2x+1 - x+3 \geq 0 \rightarrow 2x+1 \geq x+3 \rightarrow (2x+1)^2 \geq (x+3)^2$ $2x+1 \geq x+3 \rightarrow x \geq 2 \Rightarrow Df = [2, +\infty)$	$\Rightarrow Df = R - \{2\}$	4
الف) $\log_2(1 - \log_2 x) \rightarrow x > 1$ ب) $x > 1 \rightarrow 1 - \log_2 x > 0 \rightarrow \log_2 x < 1 \rightarrow x < 2$	$\Rightarrow Df = (0, \frac{1}{x})$	5

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

$$\log_{0.1}(\log_{0.1}(x-1)) > 0 \Rightarrow \log_{0.1}(x-1) < 0.1 \Rightarrow x-1 < \frac{1}{r \cdot 0.1} \Rightarrow x < \frac{1.1}{r \cdot 0.1}$$

$$\Rightarrow \frac{1}{r} < x < \frac{1.1}{r \cdot 0.1} \Rightarrow D_f = \left(\frac{1}{r}, \frac{1.1}{r \cdot 0.1} \right]$$

$$\text{الف) } (2x \cos x + 1) > 0 \rightarrow 2 \cos x > -1 \rightarrow \cos x > -\frac{1}{2}$$



$$\Rightarrow D_f = \left\{ x \in \mathbb{R} \mid x \in \left(-\frac{2\pi}{3}, \frac{2\pi}{3} \right) \right\}$$

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

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

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

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

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

$$\text{if } x=-1 \rightarrow a+r-a+b \rightarrow 4a+b+r \geq 0$$

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

$\Rightarrow$

این تابع همواره مثبت است

$$a > 0 \quad \Delta_0 \Leftarrow$$

$$x^r > 0 \Rightarrow x > x^r \Rightarrow x > |x| \rightarrow -1 < x < 1 \quad (1)$$

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

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

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