

$$\begin{array}{r} 2x^3 + 12x^2 - 18x + 9 \mid x-1 \\ -2x^3 + 2x^2 \\ \hline 14x^2 - 18x + 9 \\ -14x^2 + 14x \\ \hline -4x + 9 \\ -4x + 4 \\ \hline 5 \end{array}$$

$x \neq -\frac{4}{5}$ و $\frac{1}{5}$ و 1

$D_f = R - \left\{ -\frac{4}{5}, \frac{1}{5}, 1 \right\}$

$$\begin{array}{r} 2x^3 + 9x^2 + 10x + 3 \mid x+1 \\ -2x^3 - 2x^2 \\ \hline 11x^2 + 10x + 3 \\ -11x^2 - 11x \\ \hline x + 3 \\ -x - 1 \\ \hline 4 \end{array}$$

$x \neq -1$ و $-\frac{1}{4}$ و -3

$D_f = R - \left\{ -1, -\frac{1}{4}, -3 \right\}$

$$\begin{array}{r} x^3 - 2x^2 + 2x - 1 \mid x-1 \\ -x^3 + x^2 - x + 1 \\ \hline 0 \end{array}$$

$(x-1)(x^2 - x + 1)$
 $x \neq 1$ $\Delta < 0$
 ریشه ندارد

$D_f = R - \{1\}$

$$g = \sqrt{\frac{x+3}{(x-1)(x^2-x+1)}} \rightarrow x = 1 \text{ و } -3$$

$\Delta < 0$

$D_f = R - (-3, 1] \cup (-\infty, -3) \cup (1, \infty)$

$x \geq 1 \rightarrow x^2 - 5(x-1) - 2x + 5$
 $x^2 - 5x + 5 - 2x + 5 =$
 $x^2 - 7x + 10$
 $(x-2)(x-5) =$
 $x \neq 2 \text{ و } 5$

$D_f = R - \{2, 5\}$

بیار مثبت بر روی دایره معادله

$x \leq 1 \rightarrow x^2 - 5(-x+1) - 2x + 5 \neq 0$
 $x^2 + 5x - 5 - 2x + 5 \neq 0$
 $x^2 + 3x \neq 0$
 $x^2 - 3x \neq 0$
 $x \neq 0 \text{ و } 3$

$D_f = R - \{0, 3\}$

$[-x] \geq 2 \quad -x \geq 2 \quad x \leq -2$

$D_f = (-\infty, -2]$

$$[x]^2 - 1[x] - 3$$

$([x]+1)([x]-3) \neq 0$
 $[x] \neq -1 \quad [x] \neq 3$
 $x \neq [-1, 0) \quad x \neq [3, 4)$

$D_f = R - ([-1, 0) \cup [3, 4))$

الف) $y = \sqrt{\left[x + \frac{1}{x} - 1\right] + \left[x + \frac{1}{x}\right]}$

$y = \sqrt{\left[x + \frac{1}{x}\right] - 1 + \left[x + \frac{1}{x}\right]}$ $D_f = \left[\frac{1}{x} + \infty\right)$

$\left[x + \frac{1}{x}\right] \geq 1 \quad \left[x + \frac{1}{x}\right] \geq \frac{1}{x}$
 $x + \frac{1}{x} \geq 1 \rightarrow x \geq \frac{1}{x}$

$y = \sqrt{\left[x - \frac{1}{x}\right] + \left[\frac{1}{x} - x\right]}$

$y = \sqrt{\left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right]}$

if $\begin{cases} a \in \mathbb{Z} & [a] + [-a] = 0 \\ a \notin \mathbb{Z} & [a] + [-a] = -1 \end{cases}$

$x - \frac{1}{x} \in \mathbb{Z}$

$D_f = \left\{ x \mid x = k + \frac{1}{x} \text{ و } k \in \mathbb{Z} \right\}$

$$\frac{\cos x}{\sin x} + 1 \quad \tan x \neq -1 \quad \sin x \neq 0 \quad \cos x \neq 0$$

$$\frac{\sin x}{\cos x} + 1$$

$$D_f = \mathbb{R} - \left\{ \frac{k\pi}{\mu} \text{ و } k\pi - \frac{\pi}{\varepsilon} \right\}$$

الف)

$$ب) 1 - r \sin u \geq 0 \quad \sin^2 u \leq \frac{1}{\varepsilon} \rightarrow -\frac{1}{\sqrt{\varepsilon}} \leq \sin u \leq \frac{1}{\sqrt{\varepsilon}}$$

$$D_f = \left[rk\pi - \frac{\pi}{4}, rk\pi + \frac{\pi}{4} \right] \cup \left[rk\pi + \frac{3\pi}{4}, rk\pi + \frac{5\pi}{4} \right]$$

$$الف) \sin u - 1 \geq 0 \quad \sin u \geq \frac{1}{\sqrt{\varepsilon}}$$

$$D_f = \left[rk\pi + \frac{\pi}{4}, rk\pi + \frac{3\pi}{4} \right]$$



$$ب) 1 - r \cos u \geq 0 \quad \cos u \leq \frac{1}{\sqrt{\varepsilon}}$$



$$D_f = \left[rk\pi + \frac{\pi}{\mu}, rk\pi + \frac{3\pi}{\mu} \right]$$

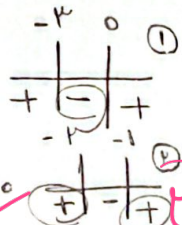
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$$الف) -1 \leq x^2 + y^2 + 1 \leq 1$$

$$x^2 + y^2 \leq 0 \rightarrow x(x+y) \leq 0$$

$$0 \leq x^2 + y^2 + 1 \rightarrow (x+1)(x+y) \geq 0$$

$$IN \rightarrow [-3, -1] \cup [-1, 0]$$



$$0 \leq \sqrt{1-x} \leq 1 \rightarrow 0 \leq 1-x \leq 1$$

$$-1 \leq -x \leq -\varepsilon \quad \text{و} \quad x \geq \varepsilon$$

$$\frac{\varepsilon}{\mu} \leq x \leq 1 \rightarrow D_f = \left[\frac{\varepsilon}{\mu}, 1 \right]$$

$$الف) x > 0$$

$$1 - \log_{\mu} x > 0$$

$$\log_{\mu} x < 1$$

$$x < \mu$$

$$\rightarrow D_f = (0, \mu)$$

$$ب) x > 0$$

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

$$\log_{\frac{1}{\mu}} x < 1 \quad x < \frac{1}{\mu}$$

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$$D_f = \left(0, \frac{1}{\mu} \right)$$

دقتی متناهی و ثابت

صفت نامدار عوض مرئوس

$$\log_{\frac{1}{\mu}} x < 1 \rightarrow x > \frac{1}{\mu} \rightarrow D_f = \left(\frac{1}{\mu}, +\infty \right)$$

$$\mu^k x - x^k \geq \mu$$

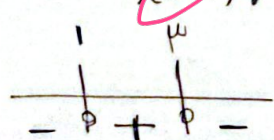
$$kx - x^k \geq \mu$$

$$-x^k + \varepsilon x - \mu \geq 0$$

$$-(x^k - \varepsilon x + \mu) \geq 0$$

$$-(x-1)(x-\mu) \geq 0$$

$$D_f = [1, \mu]$$



$$ب) \frac{\mu x + \omega}{\mu x + \varepsilon} \in \mathbb{N}$$

$$\rightarrow x = \frac{-\mu W + \omega}{\mu W - \mu}$$

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$$D_f = \left\{ x \mid x = \frac{-\mu k + \omega}{\mu k - \mu} \text{ و } k \in \mathbb{N} \right\}$$

$$9 - \text{ب}) \quad y = \log_r \left(1 - \log^{\frac{n}{r}} \frac{1}{r} \right) \rightarrow \log^{\frac{n}{r}} \frac{1}{r} \rightarrow n > 0.$$

$$\hookrightarrow 1 - \log^{\frac{n}{r}} \frac{1}{r} > 0 \rightarrow \log^{\frac{n}{r}} \frac{1}{r} < 1 \xrightarrow{\text{من بابين (1 و 2)}} n > \frac{1}{r}$$

$$Df_r \left(\frac{1}{r}, +\infty \right)$$