ماهک میرمقتدایی ←

۲۰

۱ ← الف ←

$$y=\frac{x+3}{2x^3+3x^2-8x+3}$$

$$\begin{array}{l|l} 2x^3+3x^2-8x+3 & x-1 \\ \hline -2x^3+2x^2 & 2x^2+5x-3 \\ 5x^2-8x & \\ -5x^2+5x & \\ -3x+3 & \\ 3x-3 & \\ 0 & \end{array}$$

$2x^2+5x-3 \to x^2+5x-6_{/2}$

$(x-1)(x+6)$

$(x-1)(x-1)(x+6)\neq 0$ (1, $\frac{1}{2}$, -3) $\to$ $D_f=R-\{1,\frac{1}{2},-3\}$

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۱ ← ب ←

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$$y=\frac{x+3}{2x^3+9x^2+10x+3}$$

$$\begin{array}{l|l} 2x^3+9x^2+10x+3 & x+1 \\ \hline -2x^3-2x^2 & 2x^2+7x+3 \\ 7x^2+10x & \\ -7x^2-7x & \\ 3x+3 & \\ -3x-3 & \\ 0 & \end{array}$$

$2x^2+7x+3 \Rightarrow x^2+7x+6 =$

$(x+6)(x+1)$ ($\to -3$, $\to -\frac{1}{2}$)

$(x+1)(x+6)(x+1)\neq 0$ ($\to -1$, $\to -3$, $\to -\frac{1}{2}$) $\to$ $D_f=R-\{-3,-1,-\frac{1}{2}\}$

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۲ ← الف ←

$$y=\frac{x+3}{x^3-2x^2+2x-1}$$

$$\begin{array}{l|l} x^3-2x^2+2x-1 & x-1 \\ \hline -x^3+x^2 & x^2-x+1 \\ -x^2+2x & \\ x^2-x & \\ x-1 & \\ -x+1 & \end{array}$$

$x^2-x+1 \Rightarrow \Delta<0 \Rightarrow$ ریشه ندارد

$\longrightarrow (x-1)(x^2-x+1) \Rightarrow D_f = R - \{1\}$

$y = \sqrt{\dfrac{x+2}{x^3-2x^2+2x-1}}$

$x^3-2x^2+2x-1 \;\big|\; x-1$

$-x^3+x^2$

$-x^2+2x$

x^2-x

$x-1$

$-x+1$

$x^2-x+1 \Rightarrow \Delta < 0 \Rightarrow$ همیشه مثبت

$x+2 \geq 0 \Rightarrow x \geq -2$

-2		1
$+$	0	$-$	$\nexists$	$+$

$\longrightarrow (x-1)(x^2-x+1)$

$\checkmark$

$D_f = (-\infty, 2] \cup (1, +\infty)$

$y = \dfrac{2}{x^2-3|x-1|-2x+5} \longrightarrow$

$R^- \Rightarrow x^2+3x-3-2x+3 \neq 0 \Rightarrow x^2+x \neq 0 \Rightarrow$

$x(x+1) \neq 0$

$0 \quad -1$

$R^+ \Rightarrow x^2-3x+3-2x+3 \neq 0 \Rightarrow x^2-5x+6 \neq 0 \Rightarrow$

$(x-2)(x-3) \neq 0$

$2 \quad 3$

$\rightarrow D_f = \mathbb{R} - \{-3, 0, 2, \omega\}$

$y = \frac{x+3}{|2x+1| - |x+3|} \rightarrow$ مخرج کسر

$2x+1 + x+3 = 3x \neq -4 \rightarrow x \neq -\frac{4}{3}$

$2x+1 - x-3 = x-2 \neq 0 \rightarrow x \neq 2$

$D_f = \mathbb{R} - \{-\frac{4}{3}, 2\}$ ✓ ۵

$y = \sqrt{|2x+1| - |x+3|} \rightarrow |2x+1| - |x+3| \geq 0$ دامنه

$\rightarrow |2x+1| \geq |x+3|$ به توان ۲ $\rightarrow 3x^2 - 2x - 8 \geq 0 \rightarrow$

$x^2 - 2x - 24 \geq 0 \rightarrow (x-6)(x+4) \geq 0 \rightarrow x \geq 6$ یا $x \leq -4$

	$-\infty$		-4		6		$+\infty$
	+	0	−	0	+		

$\rightarrow D_f = (-\infty, -4] \cup [6, +\infty)$

$y = \log_2^{(1 - \log_3 x)}$ ← دامنه ω

$x > 0$

$1 - \log_3 x > 0 \rightarrow \log_3 x < 1 \rightarrow x < 3$ ✓ $\rightarrow D_f = (0, 3)$ ۵

$y = \log_{\frac{1}{4}}^{(1-\log_{\frac{1}{4}}^{x})}$

$x > 0$

$1 - \log_{\frac{1}{4}}^{x} > 0 \rightarrow \log_{\frac{1}{4}}^{x} < 1 \rightarrow x > \frac{1}{4}$ ✓

$\rightarrow D_f = (0, +\infty)$

$f(x) = \sqrt{\log_{\log_{\omega}^{(2x-1)}}^{\omega}}$

$2x - 1 > 0 \rightarrow 2x > 1 \rightarrow x > \frac{1}{2}$

$\log_{\omega}^{2x-1} > 0 \rightarrow 2x - 1 > 1 \rightarrow 2x > 2 \rightarrow x > 1$

$\log_{0,\omega}^{\log_{\omega}^{2x-1}} \geq 0 \rightarrow \log_{\omega}^{2x-1} \leq 1 \rightarrow 2x - 1 \leq \omega \rightarrow 2x \leq 4 \rightarrow$

$x \leq 2$

$\rightarrow D_f = (1, 2]$

$y = \log^{(2\cos x + 1)}$

$D_f = \left(2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3}\right)$

$2\cos x + 1 > 0 \rightarrow 2\cos x > -1 \rightarrow \cos x > -\frac{1}{2} \rightarrow$ ✓

$y = \sqrt{\log \frac{x-1}{x+1}}$

$$\frac{x-1}{x+1} > 0 \rightarrow \frac{\quad -1 \qquad 1 \quad}{+ \quad - \quad +} \rightarrow (-\infty,-1)\cup(1,+\infty) \;(4)$$

$$\log_{10}\frac{x-1}{x+1} \geq 0 \Rightarrow \frac{x-1}{x+1} \geq 1 \Rightarrow \frac{x-1}{x+1} - 1 \geq 0 \Rightarrow$$

$$\frac{-2}{x+1} \geq 0 \quad \frac{\quad -1 \quad}{+ \quad -} \Rightarrow (-\infty,-1) \;(1) \xrightarrow{\text{اشتراک}} D_f = (-\infty,-1)$$

$$f(x) = \sqrt{(a+2)x^2 + ax + b}$$ ← 8

$D_f = (-\infty, 3]$ ← یک ریشه داره

$\Big\} \rightarrow a+2 = 0 \rightarrow a = -2$

$$f(x) = \sqrt{-2x+b} \Rightarrow -2x+b \geq 0 \Big\} \rightarrow 2x - b \leq 0$$

(3 ←) (3 ←)

	3	
	+	−

$$6 - b = 0 \rightarrow b = 6$$

$D_f = R \Rightarrow \Delta \leq 0$ ← 9

$$\leftarrow -8 + 8m^2 \leq 0 \Rightarrow m^2 - 2 \leq -1 \Rightarrow m^2 \leq 1$$

$$-1 \leq m \leq 1 \rightarrow 1-(-1) = 2$$

$$f(x) = \frac{\sqrt{4 - x^2}}{[x] + [-x] + 1}$$ ← 10

$4 - x^2 \geq 0 \Rightarrow x^2 \leq 4 \Rightarrow -2 \leq x \leq 2$

$[x] + [-x] + 1 \neq 0 \rightarrow [x] + [-x] \neq -1$

$1,1 \quad 1,1$

$1 - 2 = -1$

→ [illegible] → $\mathbb{Z}$

$D_f = \{-2, -1, 0, 1, 2\}$ → [illegible]