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آرشا یادی — یازدهم دفتر A — تکلیف شماره ۳

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الف) $y=\dfrac{x+3}{2x^3+3x^2-8x+3}=\dfrac{(x+3)}{(x-1)(2x^2+5x-3)}\to (x-1)(2x^2+5x-3)\neq 0 \quad x\neq 1 \quad x\neq \frac{1}{2} \quad x\neq -3$

$\Rightarrow D=\mathbb{R}-\{-3,\frac{1}{2},1\}$

ب) $y=\dfrac{x+3}{2x^3+9x^2+10x+3}=\dfrac{x+3}{(x+1)(2x^2+7x+3)}\to (x+1)(2x^2+7x+3)\neq 0 \quad x\neq -1 \quad x\neq -\frac{1}{2} \quad x\neq -3$

$\Rightarrow D=\mathbb{R}-\{-3,-1,-\frac{1}{2}\}$

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الف) $y=\dfrac{x+3}{x^3-2x^2+2x-1}=\dfrac{(x+3)}{(x-1)(x^2-x+1)}$ $\quad (x-1)(x^2-x+1)\neq 0$ (ریشه ندارد) $\quad x\neq 1$

$\Rightarrow D=\mathbb{R}-\{1\}$

ب) $y=\sqrt{\dfrac{x+3}{x^3-2x^2+2x-1}}\to \dfrac{(x+3)}{(x-1)(x^2-x+1)}\geq 0$

x		-3		1	
	+	0	−	0	+

$\Rightarrow D=(-\infty,-3]\cup[1,+\infty)$

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$y=\dfrac{2}{x^2-5|x-1|-2x+5}$ $\quad x^2-5|x-1|-2x+5\neq$

$x^2-5|x-1|-2x+5=(x-1)^2+4-5|x-1| \xrightarrow{|x-1|=m} m^2-5m+4=(m-1)(m-4)$

$m=1\Rightarrow |x-1|=1\to x=0 \quad x=2$

$m=4\Rightarrow |x-1|=4\to x=-3 \quad x=5$ $\qquad D=\mathbb{R}-\{-3,0,2,5\}$

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$y=\dfrac{x+3}{|2x+1|-|x+3|}$ $\quad |2x+1|\neq|x+3|$ $\quad 1)\ 2x+1\neq x+3\to x\neq 2$

$2)\ 2x+1\neq -x-3\to 3x\neq -4\Rightarrow x\neq -\frac{4}{3}$

$D=\mathbb{R}-\{-\frac{4}{3},2\}$

$y=\sqrt{|2x+1|-|x+3|}$ $\quad |2x+1|-|x+3|\geq 0\to |2x+1|\geq|x+3|\to (2x+1)^2\geq(x+3)^2$

$\Rightarrow 3x^2-2x-8\geq 0$

x		$-\frac{4}{3}$		2	
	+	0	−	0	+

$\Rightarrow D=(-\infty,-\frac{4}{3}]\cup[2,+\infty)$

s.a.m

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الف) $y=\log_2(1-\log_3 x)$

$\begin{cases} 1)\ x>0 \quad (I) \\ 2)\ 1-\log_3 x>0 \to \log_3 x<1 \to x<3 \quad (II) \end{cases}$

$(I)\cap(II) = 0<x<3 \longrightarrow D=(0,3)$

ب) $y=\log_2(1-\log_{\frac{1}{2}} x)$

$\begin{cases} 1)\ x>0 \quad (I) \\ 2)\ 1-\log_{\frac{1}{2}} x>0 \to \log_{\frac{1}{2}} x<1 \to x>\frac{1}{2} \quad (II) \end{cases}$

$(I)\cap(II) = D = (\frac{1}{2},+\infty)$

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$f(x)=\sqrt{\log_{0/5}\log_5(2x-1)}$

$\begin{cases} 1)\ 2x-1>0 \to 2x>1 \to x>\frac{1}{2} \quad (I) \\ 2)\ \log_5(2x-1)>0 \to (2x-1)>1 \to 2x>2 \to x>1 \quad (II) \\ 3)\ \log_{0/5}\log_5^{2x-1} \geq 0 \to \log_5^{2x-1} \leq 1 \to 2x-1 \leq 5 \to x \leq 3 \quad (III) \end{cases}$

$(I)\cap(II)\cap(III) = D = (1,3]$

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الف) $y=\log(2\cos x+1)$

$\begin{cases} 2\cos x+1>0 \to 2\cos x>-1 \to \cos x>-\frac{1}{2} \quad (I) \\ -1\leq \cos x \leq 1 \quad (II) \end{cases}$

$(I)\cap(II) = -\frac{1}{2}<\cos x\leq 1$

$D=(2k\pi-\frac{2\pi}{3},\ 2k\pi+\frac{2\pi}{3})$

ب) $y=\sqrt{\log\frac{x-1}{x+1}}$

$\begin{cases} \frac{x-1}{x+1}>0 \to \begin{array}{c|ccccc} x & & -1 & & 1 & \\ \hline & + & \oplus & - & 0 & + \end{array} \to D=(-\infty,-1)\cup(1,+\infty) \quad (I) \\ \log\frac{x-1}{x+1}\geq 0 \to \frac{x-1}{x+1}\geq 1 \to \frac{-2}{x+1}\geq 0 \to \begin{array}{c|ccc} x & & -1 & \\ \hline & + & \oplus & - \end{array} \to D=(-\infty,-1) \quad (II) \end{cases}$

$D=(I)\cap(II)=(-\infty,-1)$

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چون ۳ آغاز امتناع است $\to (a+2)(3)^2+3a+b=0$ | $(a+2)x^2+ax+b\geq 0$ $a+2=0 \to a=-2$

$\to b=-12a-18$ $\qquad$ $a=-2$ $\quad -4+b=0 \to b=4$

$\Delta=0=a^2-4(a+2)b \longrightarrow a^2-4(a+2)(-12a-18)=\Delta \to \Delta=49a^2+168a+144=0$

$a=-\frac{12}{7} \Rightarrow b=-12(-\frac{12}{7})-18=\frac{18}{7} \qquad b=\frac{18}{7}$

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$x^2+2x+2-m^2\geq 0 \xrightarrow{x=-1} 1-m^2\geq 0 \to m^2\leq 1 \to -1\leq m\leq 1$

$1-(-1)=2$

s.a.m

$$f(x)=\frac{\sqrt{4-x^2}}{[x]+[-x]+1}$$ ۱.

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

$$[x]+[-x]+1\neq 0 \rightarrow \begin{cases} 1 & ; x\in \mathbb{Z} \ \checkmark \\ 0 & ; x\notin \mathbb{Z} \end{cases}$$

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$$D=\{-2,-1,0,1,2\} \longrightarrow$$ که عدد صحیح باشند