تکلیف شماره ۳ — دنیا حسینی — یازدهم تجربی

①

الف) $y=\dfrac{x+3}{2x^3+3x^2-8x+3} \to \neq 0$

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

x^2+5x-6

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

$\frac{1}{2}$ ، $\frac{-6}{2}=-3$

ریشه های مخرج $=1, \frac{1}{2}, -3$

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

ب) $y=\dfrac{x+3}{2x^3+9x^2+10x+3} \neq 0$

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

x^2+7x+6

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

$\frac{-1}{2}$ ، $\frac{-6}{2}=-3$

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

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②

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

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

همواره + ← $\Delta<0 , a>0$

ریشه مخرج $=1$ $\qquad D_f=\mathbb{R}-\{1\}$

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

	-3		1	
$+$	0	$-$	∄	$+$

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

③

$y=\dfrac{2}{x^2-5|x-1|-2x+5} \neq 0$

$x^2-5|x-1|-2x+5=0$

$x<1 \to x^2-\underbrace{5(1-x)}_{5-5x}-2x+5=0 \to x^2-5+5x-2x+5=0$

$x^2+3x=0 \qquad x(x+3)=0 \begin{cases} x=0 \\ x=-3 \end{cases}$ هر دو قق

$x\geq 1 \to x^2-\overbrace{5(x-1)}^{5x-5}-2x+5=0$

$x^2-5x+5-2x+5=x^2-7x+10=0 \qquad (x-2)(x-5)=0$

$x=2, 5 \to$ هر دو قق

$D_f=\mathbb{R}-\{0, -3, 2, 5\}$

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④

الف) $y=\dfrac{x+3}{|2x+1|-|x+3|} \neq 0$ $\qquad |2x+1|-|x+3|=0$ ، $-\frac{1}{2}$ ، -3 $\qquad D_f=\mathbb{R}-\{-\frac{4}{3}, 2\}$

$x<-3 \to -2x-1-(-x-3)=0 \qquad -2x-1+x+3=0 \qquad -x+2=0 \qquad x=2$ غ قق

$-3<x<-\frac{1}{2} \to -2x-1-(x+3)=0 \qquad -2x-1-x-3=0 \qquad -3x-4=0$

$3x=-4 \qquad \boxed{x=-\frac{4}{3}}$ قق

$x>-\frac{1}{2} \qquad 2x+1-x-3=0 \qquad x-2=0 \qquad \boxed{x=2}$ قق

ب) $y=\sqrt{|2x+1|-|x+3|}$ ، $-\frac{1}{2}$ ، -3

I) $x<-3 \to 2-x\geq 0 \to x\leq 2$ ، $\cap \ (-\infty, -3)$

II) $-3<x<-\frac{1}{2} \to -3x-4\geq 0 \qquad 3x\leq -4 \qquad x\leq -\frac{4}{3}$ ، $\cap \ (-3, -\frac{4}{3}]$

III) $x>-\frac{1}{2} \qquad x-2\geq 0 \qquad x\geq 2 \qquad \cap \ x\geq 2 \quad [2, +\infty)$

$I \cup II \cup III \to$ $\qquad D_f=(-\infty, -\frac{4}{3}] \cup [2, +\infty)$

⑤ الف) $y=\log_2^{(1-\log_3^x)}$ $\boxed{x>0}$ $1-\log_3^x>0 \to \log_3^x<1$ $\boxed{x<3}$

$D_f=(0,3)$

ب) $y=\log_2^{(1-\log_{\frac{1}{2}}^x)}$ $\boxed{x>0}$ $1-\log_{\frac{1}{2}}^x>0$ $\log_{\frac{1}{2}}^x<1$ $\boxed{x>\frac{1}{2}}$

$D_f=(\frac{1}{2},+\infty)$

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⑥ $f(x)=\sqrt{\log_{0.5}^{\log_5^{(2x-1)}}}$ $2x-1>0$ $2x>1$ $\boxed{x>\frac{1}{2}}$ $(1,3]$

$\log_5^{2x-1}>0$ $2x-1>1$ $2x>2$ $\boxed{x>1}$

$\log_{0.5}^{\log_5^{(2x-1)}}\geq 0$ $\log_5^{(2x-1)}\leq 1$ $2x-1\leq 5$ $2x\leq 6$ $\boxed{x\leq 3}$

$D_f=(1,3]$

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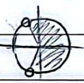
⑦ الف) $y=\log(2\cos x+1)$ $2\cos x+1>0$ $2\cos x>-1$

$\cos x>-\frac{1}{2}$  $D_f=(2k\pi-\frac{2\pi}{3},\ 2k\pi+\frac{2\pi}{3})$

ب) $y=\sqrt{\log\frac{x-1}{x+1\neq 0}}$ $\boxed{x\neq -1}$ $\frac{x-1}{x+1}>0$ $\begin{array}{c|ccccc} & & -1 & & 1 & \\ \hline & + & \emptyset & - & \emptyset & + \end{array}$ $\Big\}\cap$

$\log_{10}\frac{x-1}{x+1}\geq 0$ $\frac{x-1}{x+1}\geq 1$ $\frac{x-1-x-1}{x+1}=\frac{-2}{x+1}\geq 0$ $\begin{array}{c|ccc} & & -1 & \\ \hline & + & \emptyset & - \end{array}$

$D_f=(-\infty,-1)$

s.a.m

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⑧ $f(x)\sqrt{(a+2)x^2+ax+b} \Rightarrow \sqrt{-2x+b}$ $\boxed{b=6}$

$D_f=(-\infty,3] \to$ معادله خط است $\to \boxed{a=-2}$ ریشه $=3$ $-6+b=0$

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⑨ $f(x)=\sqrt{x^2+2x+2-m^2} \to \geq 0$ $\Delta\leq 0$ $1-(-1)=2$

$\Delta=4-\underbrace{4(1)(2-m^2)}_{8-4m^2}=4-8+4m^2=4m^2-4\leq 0$ $4(m^2-1)\leq 0$

$4(m-1)(m+1)\leq 0$ 1 -1 $\begin{array}{c|ccccc} & & -1 & & 1 & \\ \hline & + & \emptyset & - & \emptyset & + \end{array}$

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

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⑩ $f(x)=\frac{\sqrt{4-x^2}}{[x]+[-x]+1}$ I $4-x^2\geq 0$ $x^2\leq 4$ $-2\leq x\leq 2$

$[x]+[-x]+1\neq 0$ عدد صحیح

$[x]+[-x]\neq -1$ II $\begin{cases} x\in\mathbb{Z} \to [x]+[-x]=0 \\ x\notin\mathbb{Z} \to [x]+[-x]=-1 \end{cases}$ $\to x\in\mathbb{Z}$

$I\cap II \to -2\leq x\leq 2$

s.a.m