نام و نام خانوادگی: کیمیا رحیمی   پاسخنامه تشریحی تکلیف شماره: 2   کلاس: یازدهم ...

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$3x^2+y^2-4x+6y+k=0 \Rightarrow$ if $x=0$

$= y^2+6y+k=0 \Rightarrow 36-4(1)(k)=0 \Rightarrow k=9$

2

$f(x)=\begin{cases} x^2+4x & x\geq a \\ 2x+a+2 & x<a \end{cases}$

$a^2+4a=2a+a+2$

$a^2+a-2=0 \Rightarrow (a+2)(a-1)=0 \Rightarrow \begin{cases} a=-2 \text{ (crossed out)} \\ a=1 \end{cases} \xrightarrow{a>0} a=1$

$x=1 \rightarrow x^2+4x=5$

3

$f(x)=\begin{cases} 2x^2-b & |x+1|\geq 2 \Rightarrow \\ a+2x & -3<x<-1 \end{cases}$

$x+1\geq 2 \Rightarrow x\geq 1 \qquad x+1\leq -2 \Rightarrow x\leq -3$

$x=-3 \Rightarrow 18-b=a-6 \Rightarrow a+b=24$

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$y=\sqrt{6x-a}+\sqrt{b-3x} \Rightarrow D_f=\{2\}$

$\Rightarrow y=\sqrt{12-a}+\sqrt{b-6}$

$\frac{b}{a}=\frac{6}{12}=\frac{1}{2}$

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الف) $\sqrt{\frac{x+1}{|x-3|}}+\sqrt{\frac{6-x}{x^2+2x+4}}$

$\Rightarrow$ (I) $x+1\geq 0 \Rightarrow x\geq -1 \Rightarrow [-1,+\infty)-\{3\}$

(II) $\Rightarrow 6-x\geq 0 \rightarrow 6\geq x$ ، x^2+2x+4 همواره مثبت

$-1 \qquad 6$

$\Rightarrow I\cap II \Rightarrow [-1,6]-\{3\}$

ب) $\sqrt{[x]-4}+\sqrt{2-[x]} \Rightarrow [x]\geq 4 \qquad 2\geq [x]$

$x\geq 4$ (I) $\qquad 3>x$ (II)

$I\cap II=[4,+\infty)$

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ا) $\sqrt{\frac{x^2-x-6}{x^4-11x^2+24}} = \sqrt{\frac{(x-3)(x+2)}{(x^2-8)(x^2-3)}}$

	$-\sqrt{3}$	$-2\sqrt{2}$	2	$2\sqrt{2}$	$\sqrt{3}$
	+	−	−	+	+

$\Rightarrow D_f = (-\infty, -\sqrt{3}) \cup (2, 2\sqrt{2}) \cup (\sqrt{3}, +\infty)$

ب) $\sqrt{\frac{x^3-3x^2-9x+5}{x^2+2x^2-9x-5}}$ $\quad x \neq -5, -1, 1$

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ج) $\sqrt{[-x]-2}$ $\Rightarrow [-x] \geq 2 \Rightarrow -x \geq 2 \Rightarrow x \leq -2$

د) $\frac{9x^2+5}{[x]^2-2[x]-3}$ $\Rightarrow ([x]-3)([x]+1) \neq 0$ $\quad 3 > x \geq 1$ $\quad -1 > x \geq -2$

$D_f = \mathbb{R} - \{[-1, 0) \cup [2, 3)\}$

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هـ) $\frac{\cot x + 1}{\tan x + 1}$ $\quad D_f = \mathbb{R} - \{k\pi - \frac{\pi}{4}, k\pi, k\pi + \frac{\pi}{2}\}$

و) $\sqrt{1 - 4\sin^2 x}$ $\quad 1 \geq 4\sin^2 x \Rightarrow 1 \geq |2\sin x|$

$\frac{1}{2} \geq \sin x \geq \frac{1}{2} \Rightarrow D_f = [k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6}]$

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ز) $= \sqrt{\frac{1}{1 - \log_{\frac{1}{2}}^{x-1}}}$ $\Rightarrow 1 \geq \log_{\frac{1}{2}}^{x-1} \Rightarrow \frac{1}{2} \geq x - 1$ $\quad x - 1 > 0$

I: $x > 1$ $\quad$ II: $\frac{1}{2} \leq x < 1$ $\quad D_f = (\frac{1}{2}, 1) \cup [1, +\infty)$

$= \frac{\sqrt{x(x-1)}}{1 - \log_{\varepsilon}^{x^2-2x}}$

	0	1
	+	−

I: $(-\infty, 0] \cup [1, +\infty)$ $\quad$ II: $(-\infty, 0) \cup (2, +\infty)$

$1 \neq \log_{\varepsilon}^{x^2-2x} \Rightarrow x^2 - 2x \neq \varepsilon$ $\quad$ III: $x \neq \varepsilon, -1$

$I \cap II \cap III = D_f = (-\infty, -1) \cup (2, +\infty) - \{-1, \varepsilon\}$

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ح) $\sqrt{2^{\varepsilon x - x^2}} - 1$ $\Rightarrow 2^{\varepsilon x - x^2} \geq 2^0 \Rightarrow \varepsilon x - x^2 \geq 0 \Rightarrow x^2 - \varepsilon x \leq 0$

$D_f = [0, \varepsilon]$

ط) $\left(\frac{2x+5}{2x+3}\right)!$ $\quad \frac{2x+5}{2x+3} \in \mathbb{Z} \Rightarrow 2x + 5 \in 2x + 3$

$2x - 2x \in 3 - 5 \Rightarrow 0 \in -2$

$x \in \frac{\mathbb{Z} - 5}{2}$