نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

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$y=\frac{x+2}{4x^3-20x^2+31x-15}$

$4x^3-20x^2+31x-15 \mid \frac{x-1}{4x^2-16x+15}$

$-4x^3+4x^2$

$-16x^2+31x$

$+16x^2-16x$

$15x-15$

$-15x+15$

0

$(2x-5)(2x-3)$

$x=\frac{5}{2}, \frac{3}{2}$

$D=\mathbb{R}-\{1, \frac{3}{2}, \frac{5}{2}\}$

$y=\frac{x+3}{3x^3-x^2-4x-4}$

$3x^3-x^2-4x-4 \mid x+1$

$-3x^3-3x^2$

$-4x^2-4x$

$+4x^2+4x$

$-4x-4$

$+4x+4$

0

$3x^2-4x-4 \to (x-2)(x+\frac{2}{3})$

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

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

$x-\sqrt{3-2x} \neq 0 \Rightarrow x \neq \sqrt{3-2x}$

$x^2 \neq 3-2x$

$x^2+2x-3 \neq 0 \quad (x-1)(x+3) \neq 0$

$D=(-\infty, \frac{3}{2}]-\{1, -3\}$

$y=\frac{x+2}{x-\sqrt{2x-4}}$

$D=[\frac{4}{2}, +\infty)-\{4\}$

$x-\sqrt{2x-4} \neq 0 \to x^2 \neq 2x-4 \to x^2-2x+4 \neq 0$

$\to (x-2)(x-2)$

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الف) $y=\frac{\sin x}{2\cos x-1}$

$2\cos x-1 \neq 0 \quad \cos x \neq \frac{1}{2}$

$2\cos x \neq 1$

$D=\mathbb{R}-\{\frac{\pi}{3}+2k\pi, \frac{5\pi}{3}+2k\pi\}$

ب) $y=\frac{\cos x+1}{2\sin x+1}$

$2\sin x+1 \neq 0 \Rightarrow 2\sin x=-1$

$\sin x \neq -\frac{1}{2}$

$D=\mathbb{R}-\{2k\pi+\frac{7\pi}{6}, 2k\pi+\frac{11\pi}{6}\}$

ج) $y=\frac{\tan x+2}{\cot x-1} \neq 0$

$\cot x \neq 1$

$D=\mathbb{R}-\{k\pi+\frac{\pi}{4}\}$

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

$2\sin^2 x-3\sin x-2 \neq 0 \quad \sin x \neq \frac{\sqrt{2}}{2}$

$D=\mathbb{R}-\{\frac{\pi}{3}+2k\pi, \frac{5\pi}{3}+2k\pi, \frac{\pi}{4}+2k\pi, \frac{3\pi}{4}+2k\pi\}$

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$x^2-5x+6 \geq 0 \quad (x-2)(x-3) \geq 0$

$D=(-\infty, 2] \cup [3, +\infty)$

$x^2-5x+5 < 0 \quad (x-1)(x-5) < 0$

$D=(1, 5)$

$x^2+5x+5 \geq 0 \to (x+1)(x+5) \geq 0$

$D=(-\infty, -5] \cup [-1, +\infty)$

$x^2-7x+6 \leq 0 \to (x-1)(x-6) \leq 0$

$D=[1, 6]$

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$\frac{x^2-3x+2}{x-5} < 0 \quad \frac{(x-1)(x-2)}{(x-5)} < 0$

$D=(-\infty, 1) \cup (2, 5)$

$\frac{x^2-1}{x^2-4x+5} \geq 0 \quad \frac{(x+1)(x-1)}{(x-1)x-5} \geq 0$

$D=(-\infty, -1] \cup (5, +\infty)$

$y=\sqrt{\dfrac{x^2-4x+3}{x^3-1}} \rightarrow \dfrac{x^2-4x+3}{x^3-1}\geq 0 \rightarrow \dfrac{(x-1)(x-3)}{(x-1)(x^2+1+2x)}=\dfrac{(x-1)(x-3)}{(x-1)(x+1)(x+1)}\geq 0$ ۶

$-1 \quad 1 \quad 3$: $-\ |\ -\ |\ -\ 0\ +$ $\quad D=[3,+\infty)$

$y=\sqrt[3]{\dfrac{x^2-4x+3}{x^2-1}} \rightarrow \dfrac{x^2-4x+3}{x^2-1} \rightarrow x^2-1\neq 0 \quad x\neq 1$

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

الف) $y=\log^{x^2-3x}$ $\quad x^2-3x>0 \quad x(x-3)>0 \quad D=(-\infty,0)\cup(3,\infty)$

ب) $y=\log_{|x|-2}^{16-x^2}$ $\quad 16-x^2>0$ $\quad \begin{cases} x>3 \\ x<0 \end{cases}$ $\quad D=(-4,-2)\cup(2,4)-\{\pm 3\}$ ۷

$-4<x<4 \quad |x|-2>0 \Rightarrow |x|>2 \Rightarrow x>2$ یا $x<-2$

ج) $y=\log_{10-x}\dfrac{x^2-7x+12}{x-3} \rightarrow \dfrac{(x-3)(x-4)}{x-3}$ $\quad$ $3\ \ 4$: $-\ |\ -\ 0\ +$ $\quad x>4$

$D=(4,10)-\{9\}$ $\quad x\leq 4$ یا $x\geq 7$ $\quad D=(0,1)\cup[4,?]$

د) دامنه جواب $x^2-11x+28\geq 0 \Rightarrow (x-7)(x-4)\geq 0 \quad x\neq 1,\ x>0$

$y=\dfrac{x^2-x}{x^2+x}=\dfrac{x(x-1)}{x(x+1)}$

روش آپارتمانی

x		-1		0		1	
x^2-x	+		+	0	−	0	+
x^2+x	−	0	+	0	−		−
	−		+		+		−

ق ق $\quad$ ق ق

روش ساده

$-1 \quad 0 \quad 1$: $+\ |\ -\ |\ -\ 0\ +$

$D=\mathbb{R}-\{0,-1\}$ ۸

ق ق $\quad$ ق ق

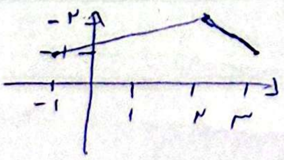
$y=\sqrt{\dfrac{x-f(x)}{f(x)}}$

$-2,2$ ریشه

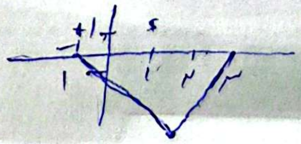
$-2\ \ -1\ \ 2\ \ 3$: $-\ |\ +\ 0\ -\ |\ +\ 0\ -$ $\rightarrow D=(-2,-1]\cup[-2,-1]$

$\dfrac{x-f(x)}{f(x)}\geq 0 \qquad f(x)\neq 0$ $\qquad \cup(2,3]$ ۹

$f(x)+1$



$-f(x)$



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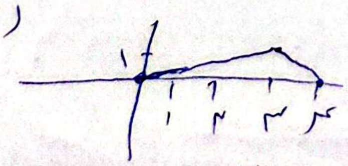
$f(x-1)$



$f(x+1)+2$