کلع ۲۵

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

$y=\dfrac{x+4}{(2x-5)(2x-3)(x-1)}$ $\qquad D_f=R-\{1,\frac{3}{2},\frac{5}{2}\}$

$$\begin{array}{l|l} 4x^3-20x^2+31x-15 & x-1 \\ \underline{-4x^3+4x^2} & 4x^2-16x+15 \\ -16x^2+31x-15 & \\ \underline{+16x^2-16x} & \\ 15x-15 & \\ \underline{-15x+15} & \\ 0 & \end{array}$$

$y=\dfrac{x+3}{3x^3-x^2-8x-4}$

$y=\dfrac{x+3}{(3x+2)(x-2)(x+1)}$ $\qquad D_f=R-\{\frac{2}{3},2,-1\}$

$$\begin{array}{l|l} 3x^3-x^2-8x-4 & x+1 \\ \underline{-3x^3-3x^2} & 3x^2-4x-4 \\ -4x^2-8x-4 & \\ \underline{+4x^2+4x} & \\ -4x-4 & \\ \underline{+4x+4} & \\ 0 & \end{array}$$

$x^2-4x-12$

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

$x-\sqrt{3-2x}\neq 0$ $\qquad 3-2x\geq 0$

$x\neq\sqrt{3-2x}$ $\qquad 3\geq 2x$

$x^2\neq 3-2x$ $\qquad x^2-3+2x\neq 0$ $\qquad \frac{3}{2}\geq x$

$(x+3)(x-1)\neq 0$

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

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

$x-\sqrt{3x-2}\neq 0$ $\qquad 3x-2\geq 0$

$x\neq\sqrt{3x-2}$ $\qquad 3x\geq 2$

$x^2\neq 3x-2$ $\qquad x^2-3x+2\neq 0$ $\qquad x\geq\frac{2}{3}$

$(x-1)(x-2)\neq 0$

$D_f=[\frac{2}{3},1)\cup(1,2)\cup(2,+\infty)$

$y=\dfrac{\sin x}{2\cos x-1}$ $\qquad 2\cos x-1\neq 0$ $\qquad 2\cos x\neq 1$ $\qquad \cos x\neq\frac{1}{2}$ $\qquad D_f=R-\{2k\pi+\frac{2\pi}{6},2k\pi-\frac{2\pi}{6}\}$

$y=\dfrac{\cos x+1}{2\sin x+1}$ $\qquad 2\sin x+1\neq 0$ $\qquad \sin x\neq -\frac{1}{2}$ $\qquad D_f=R-\{2k\pi-\frac{\pi}{6},2k\pi-\frac{5\pi}{6}\}$

$y=\dfrac{\tan x+2}{\cot x-1}$

$\cos x\neq 0$ $\qquad D=R-\{\frac{\pi}{2}+2k\pi,2k\pi-\frac{\pi}{2}\}$

$\cot x-1\neq 0$

$\cot x\neq 1$ $\qquad D=R-\{k\pi+\frac{\pi}{4}\}$

$\sin x\neq 0$ $\qquad D=R-\{k\pi\}$

$D_f=R-\{\frac{k\pi}{2},k\pi+\frac{\pi}{4}\}$

$y=\dfrac{\sin x+1}{4\sin^2 x-3}$

$4\sin^2 x-3\neq 0$

$\sin^2 x\neq\frac{3}{4}$

$\sin x\neq\pm\frac{\sqrt{3}}{2}$

$D_f=R-\{k\pi+\frac{\pi}{3},k\pi-\frac{\pi}{3}\}$

$y=x^2-5x+6>0$ $\qquad (x-2)(x-3)>0$

	2		3	
+	0	−	0	+

$D_f=(-\infty,2)\cup(3,+\infty)$

$y=x^2-6x+5<0$ $\qquad (x-1)(x-5)<0$

	1		5	
+	0	−	0	+

$D_f=(1,5)$

$y=x^2+6x+5\geq 0$ $\qquad (x+1)(x+5)\geq 0$

	−5		−1	
+	0	−	0	+

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

$y=x^2-7x+6\leq 0$ $\qquad (x-1)(x-6)\leq 0$

	1		6	
+	0	−	0	+

$D_f=[1,6]$

$y=\dfrac{x^2-3x+2}{x-5}<0$ $\qquad \dfrac{(x-1)(x-2)}{x-5}<0$

	1		2		5	
−	0	+	0	−	∄	+

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

$y=\dfrac{x^2-1}{x^2-6x+5}\geq 0$ $\qquad \dfrac{(x-1)(x+1)}{(x-1)(x-5)}\geq 0$

	−1		1 *		5	
+	0	−	∄	−	∄	+

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

$y=\sqrt{\frac{x^2-4x+3}{x^2-1}} \Rightarrow y=\sqrt{\frac{(x-1)(x-3)}{x^2-1}}$ $\quad \frac{(x-1)(x-3)}{x^2-1}\geq 0$

	-1	1	3
	+	-	+

$D_f=[3,+\infty)$

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

	-1	1
	+	-

$D_f=R-\{-1,1\}$

$y=\log(x^2-3x)$ $\quad x^2-3x>0$ $\quad x(x-3)>0$

	0	3
	+	-

$D_f=(-\infty,0)\cup(3,+\infty)$

$y=\log\frac{14-x^2}{|x|-2}$ $\quad 14-x^2>0$ $\quad |x|-2>0$ $\quad |x|-2\neq 1$ $\quad x^2<14$ $\quad |x|>2$ $\quad |x|\neq 3$

$x>-4$, $x<-2$, $x>2$, $x\neq 3$, $x\neq -3$

$D_f=((-4,-2)\cup(2,4))-\{3,-3\}$

$y=\log\frac{x^2-7x+12}{x-2}$ $\quad \frac{x^2-7x+12}{x-2}>0$ $\quad \frac{(x-3)(x-4)}{x-2}$

	2	3	4
	-	+	-

$10-x>0$ $\quad 10>x$

$10-x\neq 1$ $\quad 9\neq x$

$D_f=(2,3)\cup(4,9)\cup(9,10)$

$y=\sqrt{x^2-11x+28}+\log_x\sqrt{24-2x^2}$

$\frac{x^2-x}{x^2+2x}$

	-1	0	1
x^2-x	+	+	-
x^2+2x	+	-	+
$D(x)$	+	-	+

$(x-4)(x-7)\geq 0$ $\quad \sqrt{24-2x^2}>0$ $\quad 24-2x^2\geq 0$ $\quad x^2\leq 12$ $\quad -4\leq x\leq 4$

	4	7
	+	-

$x>0$ $\quad x\neq 1$

	-1	0	1
	+	-	+

$D_f=[4,7]\cap(0,4]-\{1\}$

$D_f=(0,4]-\{1\}$

$\sqrt{\frac{x-f(x)}{f(x)}} \Rightarrow$

	-4	-1	2	3
	-	+	-	+

$D_f=(-2,-1]\cup(2,3]$

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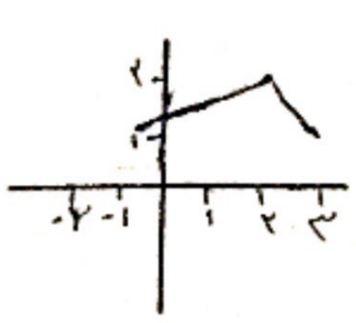

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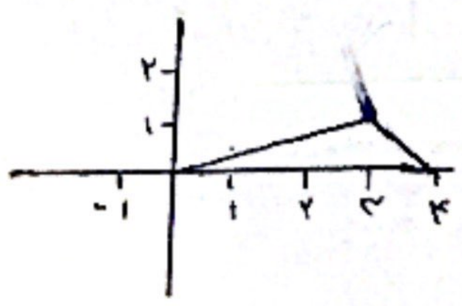

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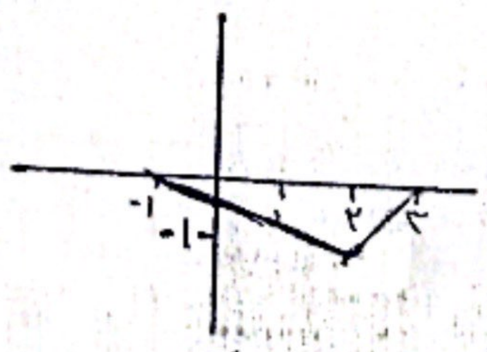

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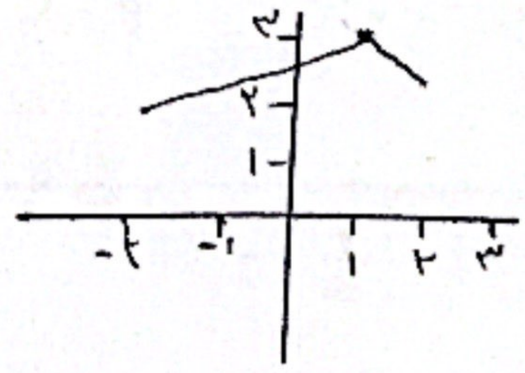

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