نام و نام خانوادگی ...تینا ثابت بین... پاسخنامه تشریحی تکلیف شماره ..۶.. کلاس ..دهم ریاضی B..

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الف) $\frac{x+4}{(x-1)(4x^2-16x+15)}$

$4x^3-20x^2+31x-15 \div (x-1) = 4x^2-16x+15$

$-4x^3+4x^2$, $-16x^2+31x$, $+16x^2-16x$, $15x-15$, $-15x+15$, 0

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

ب) مخرج بر $x+1$ بخش پذیر است

$3x^3-x^2-8x-4 \div (x+1) = 3x^2-4x-4$

$-3x^3-3x^2$, $-4x^2-8x$, $+4x^2+4x$, $-4x-4$, $+4x+4$, 0000

$(x+1)(3x^2-4x-4)$

$(x^2-4x-12) \rightarrow (x-6)(x+2)$

$x^2-16x+60 \rightarrow (x-10)(x-6) \rightarrow \frac{10}{4}, \frac{6}{4}$

$\frac{6}{3}, -\frac{2}{3}$

$D_f = \mathbb{R} - \{-1, \frac{6}{3}, -\frac{2}{3}\}$

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الف) $\frac{x+1}{x-\sqrt{3-2x}} \rightarrow \begin{cases} 3-2x \geq 0 \rightarrow 2x \leq 3 \rightarrow x \leq \frac{3}{2} \; (1/5) \quad (I) \\ x-\sqrt{3-2x} \neq 0 \rightarrow \sqrt{3-2x} \neq x \rightarrow x^2 \neq 3-2x \end{cases}$

$x^2+2x-3 \neq 0 \rightarrow (x+3)(x-1) \quad (II)$ ، (-3) غیرقابل قبول

$I \cap II \rightarrow D_f = (-\infty, 1/5] - \{1\}$

ب) $\begin{cases} 3x-2 \geq 0 \rightarrow 3x \geq 2 \rightarrow x \geq \frac{2}{3} \quad (I) \\ x-\sqrt{3x-2} \neq 0 \rightarrow x \neq \sqrt{3x-2} \rightarrow x^2 \neq 3x-2 \rightarrow x^2-3x+2 \neq 0 \rightarrow (x-1)(x-2) \quad (II) \end{cases}$

$I \cap II \rightarrow D_f = [\frac{2}{3}, +\infty) - \{1, 2\}$

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الف) $2\cos x - 1 \neq 0 \rightarrow 2\cos x \neq 1 \rightarrow \cos x \neq \frac{1}{2}$ $\rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3}\}$

ب) $2\sin x + 1 \neq 0 \rightarrow 2\sin x \neq -1 \rightarrow \sin x \neq -\frac{1}{2}$ $\rightarrow D_f = \mathbb{R} - \{2k\pi - \frac{\pi}{6}, 2k\pi + k\pi + \frac{\pi}{6}\}$

ج) $\cot x - 1 \neq 0 \rightarrow \cot x \neq 1$

$\cos x \neq 0$ و $\sin x \neq 0$

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

د) $4\sin^2 x - 3 \neq 0 \rightarrow 4\sin^2 x \neq 3 \rightarrow \sin^2 x \neq \frac{3}{4}$

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

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

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الف) $x^2-5x+6 > 0 \rightarrow (x-2)(x-3) > 0 \rightarrow$ (+ ۲ − ۳ +) $\rightarrow D_f = (3, +\infty) \cup (-\infty, 2)$

ب) $(x-1)(x-5) < 0$ (+ ۱ − ۵ +) $\rightarrow D_f = (1, 5)$

ج) $x^2+6x+5 \geq 0 \rightarrow (x+1)(x+5) \geq 0$ (+ −۵ − −۱ +) $\rightarrow D_f = [-1, +\infty) \cup (-\infty, -5]$

د) $(x-1)(x-4) \leq 0$ (+ ۱ − ۴ +) $\rightarrow D_f = [1, 4]$

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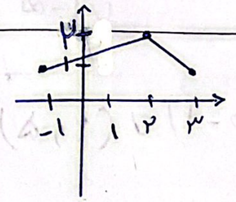
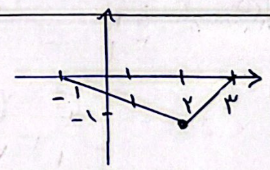
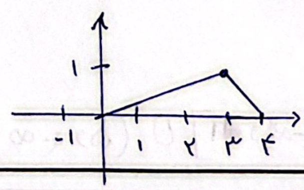
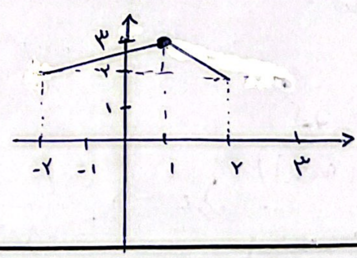
الف) $\frac{(x-1)(x-2)}{x-5} < 0 \rightarrow$ (− ۱ + ۲ − ۵ +) $\rightarrow D_f = (-\infty, 1) \cup (2, 5)$

ب) $\frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0 \rightarrow$ (+ −۱ − ۱ − ۵ +) $\rightarrow D_f = (-\infty, -1] \cup (5, +\infty)$

الف) $\dfrac{(x-1)(x-3)}{x^3-1} \geq 0 \rightarrow$ $\overset{*}{-\,1\,-}\ \ 3\,+ \rightarrow D_f = [3, +\infty)$ ب) رادیکال فرجه فرد $\rightarrow x^2-1 \neq 0 \rightarrow (x-1)(x+1) \neq 0 \rightarrow D_f = \mathbb{R} - \{\pm 1\}$	۶
الف) $x^2-3x>0 \rightarrow x(x-3)>0 \rightarrow$ $+\ 0\ -\ 3\ + \rightarrow D_f = (3,+\infty) \cup (-\infty, 0)$ ب) $\begin{cases} 16-x^2>0 \rightarrow (4-x)(4+x)>0 \rightarrow -4\ +\ 4\ - \rightarrow (-4,4) \\ \lvert x\rvert -2>0 \rightarrow \lvert x\rvert >2 \rightarrow x>2,\ x<-2 \\ \lvert x\rvert -2 \neq 1 \rightarrow \lvert x\rvert \neq 3 \rightarrow x \neq \pm 3 \end{cases}$ $\rightarrow D_f = (-4,-2)-\{-3\} \cup (2,4)-\{3\}$ ج) $\dfrac{x^2-7x+12}{x-3}>0 \rightarrow \dfrac{(x-3)(x-4)}{x-3} \rightarrow$ $\overset{*}{-\,3}\ -\ 4\ + \rightarrow (4,+\infty)$ $10-x>0 \rightarrow x<10$ $10-x \neq 1 \rightarrow x \neq 9 \rightarrow D_f = (4,10)-\{9\}$ د) $y=\sqrt{(x-4)(x-7)} + \log_x \sqrt{36-x^2}$ $(x-4)(x-7) \geq 0 \rightarrow +\ 4\ -\ 7\ + \rightarrow [7,+\infty) \cup (-\infty,4]$ $\sqrt{(6-x)(6+x)}>0 \rightarrow -6\ +\ 6\ - \rightarrow (-6,6)$ $x>0,\ x\neq 1$ $\rightarrow D_f = (0,4]-\{1\}$	
$\dfrac{x(x-1)}{x^2+x} \rightarrow \dfrac{x(x-1)}{x(x+1)}$ ارزش سریع $\rightarrow$ $+\ \overset{ت}{-1}\ -\ \overset{*}{\underset{}{0}}\ -\ 1\ +$ آپارتمانی $\rightarrow$ (table below)	۸
$\dfrac{x-f(x)}{f'(x)} \geq 0$ $\quad -\ \overset{ت}{-2}\ +\ -1\ -\ \overset{ت}{2}\ +\ 3\ - \quad D_f = (-2,-1] \cup (2,3]$ $f'(x)$: $-2, 2$	۹
الف)  ج)  ب)  د) 	۱۰

Sign table for question 8:

		-1		0		1	
x^2-x	$+$		$+$	0	$-$	0	$+$
x^2+x	$+$	0	$-$	0	$+$		$+$
$-1, 3$	$+$	ت	$-$	ت	$-$	0	$+$