نام و نام خانوادگی ...[illegible]... پاسخنامه تشریحی تکلیف شماره .... کلاس ....

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الف) $\frac{x-1}{x} - \frac{x}{x-1} = \frac{(x-1)^2 - x^2}{x(x-1)} \to \frac{(x-1-x)(x-1+x)}{x(x-1)} = \frac{-2x+1}{x(x-1)}$

$0 \quad \frac{1}{2} \quad 1$

$- \quad + \quad - \quad +$

$D_f = (0, \frac{1}{2}] \cup (1, \infty)$

$-3 \quad -1 \quad 0 \quad 1 \quad \frac{5}{4}$

$- \quad + \quad - \quad + \quad -$

ب) $\dfrac{\frac{x-2x-3}{x(x-1)}}{\frac{3x+6+x-1}{(x-1)(x+2)}} = \dfrac{\frac{-x-3}{x(x+1)}}{\frac{4x+5}{(x-1)(x+2)}} = \frac{(x-1)(x+2)(-x-3)}{x(x+1)(4x+5)}$

$D_f = \mathbb{R} - \{-1, 0, \frac{5}{4}\}$

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الف) $(\frac{1}{3})^x - 9 \neq 0 \quad \frac{1}{3^x} \neq 3^2 \to x = -2$ $\quad 32 - 4^x \neq 0 \quad 32 \neq 4^x$

$2^5 \neq 2^{2x} \quad x \neq 2.5$

$-2 \quad 2.5$

$+ \quad - \quad +$

$D_f = (-\infty, -2] \cup [2.5, \infty)$

ب) $\sqrt[4]{x-1} + \sqrt{x+1} \geq 3$

همیشه مقدار

$\to \sqrt[4]{x-1} \leq 3 \to x \leq 82$ (I) $\quad x \geq 1$ (II)

$D_f = [1, 82] \quad 82 \geq x \geq 1$

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$x^2 - x - 2 > 1 \quad x^2 - x - 3 > 1 \quad \Delta = b^2 - 4ac \to 1 + 12 = 13$

$\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{1 \pm \sqrt{13}}{2} \quad \frac{1-\sqrt{13}}{2} \quad \frac{1+\sqrt{13}}{2}$

$+ \quad - \quad +$ (I) $\quad x^2 - 1 \geq 0 \quad x^2 \geq 1 \quad -1, 1$

$\mathbb{R} - [\frac{1-\sqrt{13}}{2}, \frac{1+\sqrt{13}}{2}] - (-1, 1) \to \mathbb{R} - [\frac{1-\sqrt{13}}{2}, \frac{1+\sqrt{13}}{2}]$

$D_f = \mathbb{R} - [\frac{1-\sqrt{13}}{2}, \frac{1+\sqrt{13}}{2}]$

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$3 + -2a - 4 = 0 \quad a = -\frac{1}{2}$

$3 + ba - b^2 = 0 \to b = \dfrac{\frac{1}{2} \pm \sqrt{\frac{49}{4}}}{-2}$

$-\frac{1}{2} + \frac{3}{2} = 1$

$\dfrac{\frac{1}{2} \pm \frac{7}{2}}{-2} \quad -2 \quad \frac{3}{2}$ ✓

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$f(x) - x \geq 0 \to$

$2x - 2 \quad x \geq 1$ (I) $\qquad I \cup III = [1, \infty)$ 1

$x + 3 \quad x < 1$ (II) $\qquad II \cup IIII = [-3, 1)$ 2

$1 \cup 2 = [-3, \infty)$

$2x - 2 \geq 0 \quad 2x \geq 2 \to x \geq 1$ III

$x + 3 \geq 0 \quad x \geq -3$ IIII

$2(7a+7)=14a+14=4a-6$ $10a=-20 \quad a=-2$	۶
$\sqrt{2-\sqrt{3}}+\frac{1}{\sqrt{2-\sqrt{3}}}+2+\sqrt{2+\sqrt{3}}+\frac{1}{\sqrt{2+\sqrt{3}}}+2 \Rightarrow$ $\frac{\sqrt{2-\sqrt{3}}+\sqrt{2+\sqrt{3}}}{\sqrt{4-3}}+\sqrt{2-\sqrt{3}}+\sqrt{2+\sqrt{3}}+4=2\sqrt{2-\sqrt{3}}+2\sqrt{2+\sqrt{3}}+4$	۷
۹ $-2 \to 4f_{-2}-3(-2)f_{(0)}=16+2m+3m$ $-6f_0=16+5m$ $0 \to 2f_0-\cancel{3(0)}f_{(2)}=3m \to f_{(0)}=\frac{3}{2}m \quad \Big\} -6(\frac{3}{2})m=16+5m$ $-9m=16+5m \quad -14m=16 \quad m=-\frac{16}{14} \quad \frac{3}{2}(-\frac{16}{14})=-\frac{12}{7}$	۹
۸ $\begin{cases}2f_x-3f_{-x}=4x^2-x\\2f_{-x}-3f_x=4x^2+x\end{cases} \to \quad -\frac{9}{2}f_{-x}+3f_x=6x^2-\frac{3}{2}x \quad -\frac{5}{2}f_{-x}=10x^2+\frac{1}{2}x$ $2f_{-x}-3f_x=4x^2+x \quad -5f_{-x}=20x^2+x$ تابع قطعی است $\quad f_{-x}=-4x^2-\frac{1}{5}x$ $\to \frac{4}{3}f_x-2f_{-x}=\frac{8}{3}x^2-\frac{2}{3}x \Big] \to -\frac{5}{3}f_x=\frac{20}{3}x^2+\frac{1}{3}x \quad f_x\begin{cases}4x^2+\frac{1}{5}x & x\geq 0\\-4x^2+\frac{1}{5}x & x<0\end{cases}$ $-3f_x+2f_{-x}=4x^2+x$ $-5f_x=20x^2+x \quad f_x=-4x^2+\frac{1}{5}x$	۸
$ax+b+\frac{a}{x}+b \to \frac{ax^2+2bx+a}{x}=\frac{3x^2-12x+3}{x} \quad a=3,\ b=-6$ $3x-6=f_{(x)} \to f_{-1}=-3-6=-9$	۱۰