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

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الف) $x \neq 0, 1$ $\quad \frac{x-1}{x} - \frac{x}{x-1} \geq 0 \longrightarrow \frac{x^2-2x+1-x^2}{x^2-x} \geq 0$

$\longrightarrow \frac{-2x+1}{x^2-x} \geq 0$ $\quad$  $\quad D_f = (-\infty, 0) \cup [\frac{1}{2}, 1)$

ب) $x+1 \neq 0 \longrightarrow x \neq -1$ $\quad x \neq 0$ $\quad x-1 \neq 0 \longrightarrow x \neq 1$ $\quad D_f = \mathbb{R} - \{-2, -\frac{5}{4}, -1, 0, 1\}$

$x+2 \neq 0 \longrightarrow x \neq -2$ $\quad \frac{3}{x-1} + \frac{1}{x+1} \neq 0 \longrightarrow \frac{4x+3}{(x+2)(x-1)} \neq 0$ $\quad x \neq -\frac{3}{4}$

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$(3^{-x} - 3^2)(2^a - 2^{2x}) \geq 0$ $\quad$ 

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

ب) $x-1 \geqslant 0 \longrightarrow x \geqslant 1$ $\quad 4 - \sqrt[4]{x-1} \geqslant 0 \longrightarrow 4 \geqslant \sqrt[4]{x-1}$

به توان ۴ $\longrightarrow 81 \geqslant x-1 \Rightarrow 82 \geqslant x$ $\quad D_f = [1, 82]$

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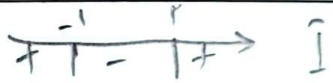
$x^2 - x - 2 > 0 \longrightarrow (x-2)(x+1) > 0$ $\quad$ 

$x^2 - 1 \geqslant 0 \longrightarrow (x-1)(x+1) \geqslant 0$ $\quad$ 

$\sqrt{x^2-1} \neq -1 \longrightarrow$ همواره برقرار

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

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$x=-2 \longrightarrow -8 - 2a + 3 = 0 \Rightarrow a = -\frac{1}{2}$ $\quad -x^2 - \frac{1}{4}x + 3 < 0$

$\Rightarrow -(x + \frac{1}{4})(x - \frac{3}{4}) < 0 \Rightarrow b = \frac{3}{4}$ $\quad a+b = 1$

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$\begin{cases} 3x - 2 \geqslant x \longrightarrow 2x - 2 \geqslant 0 \longrightarrow x \geqslant 1 \\ 2x + 3 \geqslant x \longrightarrow x + 3 \geqslant 0 \longrightarrow x \geqslant -3 \end{cases} \longrightarrow -3 \leqslant x < 1$

$\Rightarrow D_g = [-3, +\infty)$

$2(7a+7)=3a-4+a \rightarrow 14a+14=4a-2 \rightarrow 10a=-16$ $\rightarrow a=-1,1$	۶
$(2-\sqrt{3})(2+\sqrt{3})=1 \quad 2-\sqrt{3}=b \quad 2+\sqrt{3}=a$ $t=\sqrt{a}+\frac{1}{\sqrt{a}} \quad f(a)+f(b)=(\sqrt{a}+\frac{1}{\sqrt{a}}+2)+(\sqrt{b}+\frac{1}{\sqrt{b}}+2)$ $\sqrt{b}+\frac{1}{b}=\sqrt{a}+\frac{1}{a} \rightarrow =2t+4 \quad t^2=a+\frac{1}{a}+2 \quad a+\frac{1}{a}=2+\sqrt{3}+(2-\sqrt{3})=4$ $t^2=4+2=6 \Rightarrow t=\sqrt{6} \quad f(a)+f(b)=2\times\sqrt{6}+4=2\sqrt{6}+4$	۸
$2f(x)-3f(-x)=4x^2-x$ $2f(-x)-3f(x)=4x^2+x$ $\Rightarrow -5f(x)=20x^2+x$ $\Rightarrow f(x)=-4x^2-\frac{x}{5}$	۷
$x=2 \rightarrow 6f(0)=5m+15 \rightarrow 18f(0)=15m+45$ $x=0 \rightarrow 2f(0)=3m-1 \rightarrow 10f(0)=15m-5$ $\Rightarrow f(0)=\frac{25}{4}$	۹
$\frac{x(3x-12)+3}{x}=3x-12+\frac{3}{x}=3x-9+\frac{3}{x}-9$ $f(x)+f(\frac{1}{x})=3x-9+\frac{3}{x}-9 \Rightarrow f(x)=3x-9$ $f(\frac{1}{x})=\frac{3}{x}-9$ $f(-1)=-3-9=-12$	۱۰