نام و نام خانوادگی ...امیرحسین [illegible]..... پاسخنامه تشریحی تکلیف شماره ..۴..... کلاس یازدهم.........

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الف) $\sqrt{\frac{(x-1)^2-x^2}{x(x-1)}} = \sqrt{\frac{-2x+1}{x(x-1)}} \to \frac{-2x+1}{x(x-1)} \geq 0$

x		0		$\frac{1}{2}$		1	
y	$+$	∄	$-$	0	$+$	∄	$-$

$\to D_f=(-\infty,0)\cup[\frac{1}{2},1)$

ب) $\dfrac{\frac{1}{x+1}-\frac{2}{x}}{\frac{3}{x-1}+\frac{1}{x+2}} = \dfrac{\frac{x-2x-2}{x(x+1)} \Rightarrow \neq 0}{\frac{3x+6+x-1 \Rightarrow \neq 0}{(x-1)(x+2) \Rightarrow \neq 0}}$

1) $(x-1)(x+2)\neq 0 \to \boxed{x\neq 1, -2}$

2) $4x+5\neq 0 \to \boxed{x\neq -\frac{5}{4}}$

3) $x(x+1)\neq 0 \to \boxed{x\neq 0, -1}$

$D_f=\mathbb{R}-\{-2, -\frac{5}{4}, -1, 0, 1\}$

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$\left((\frac{1}{3})^x-9\right)(32-4^x)\geq 0$

-2 ، $\frac{5}{2}$

x		-2		$\frac{5}{2}$	
y	$+$	0	$-$	0	$+$

$D_f=(-\infty,-2]\cup[\frac{5}{2},+\infty)$

$\underbrace{\sqrt[4]{x-1}}_{\text{۰ یا +}}+\underbrace{\sqrt{y+1}}_{\text{۰ یا +}}=3$

1) $x-1\geq 0 \to \boxed{x\geq 1}$

2) $\sqrt[4]{x-1}\leq 3 \to x-1\leq 81 \to \boxed{x\leq 82}$

$\Rightarrow D_f=[1, 82]$

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$\dfrac{\log_4(x^2-x-2)}{\sqrt{x^2-1}+1}$

$x^2-1\geq 0$

$x^2\geq 1 < \begin{matrix} x\geq 1 \\ x\leq -1 \end{matrix}$

$x^2-x-2>0$

$(x-2)(x+1)>0 \longrightarrow (-\infty,-1)\cup(2,+\infty)$

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

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$\sqrt{3+ax-x^2} \to D_f=[-2,b]$

$x=-2 \to y=0$

$\xrightarrow{x=-2} 3-2a-4=0$

$-2a-1=0$

$-2a=1 \to \boxed{a=-\frac{1}{2}}$

$\sqrt{\underbrace{3-\frac{1}{2}x-x^2}}$ $\qquad D_f=[-2, \frac{3}{2}]$

$3-\frac{1}{2}x-x^2\geq 0$

$-2x^2-x+6\geq 0 \xrightarrow{\text{روش}} x^2-x-12\geq 0$

$(x-4)(x+3)\geq 0$

$\frac{4}{-2}=-2 \qquad \frac{-3}{-2}=\frac{3}{2}$

$\Rightarrow \boxed{a+b=\frac{3}{2}-\frac{1}{2}=\frac{2}{2}=1}$

پاسخ

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$g(x)=\sqrt{f(x)-x}$

$f(x)=\begin{cases} 3x-2 & ; x\geq 1 \\ 2x+3 & ; x<1 \end{cases}$

$\xrightarrow{x\geq 1} g(x)=\sqrt{3x-2-x}=\sqrt{2x-2} \to 2x-2\geq 0 \to \boxed{x\geq 1}$

$\xrightarrow{x<1} g(x)=\sqrt{2x+3-x}=\sqrt{x+3} \to x+3\geq 0 \to \boxed{x\geq -3} \Rightarrow \boxed{-3\leq x<1}$

$D_f=[-3,+\infty)$

$2f(5) = f(-2) + a$

$2f(5) = 3a - 4 + a = 4a - 4$

$f(5) = 2a - 2$

$\Longrightarrow 2a - 2 = 7a + 7$

$\xrightarrow{x=5} \underset{f(5)}{(a+1)}(7) = 7a + 7$

$5a = -9$

$\boxed{a = -\frac{9}{5}}$ 6

$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + 2$ $\quad \sqrt{2+\sqrt{3}} = u \quad \sqrt{2-\sqrt{3}} = v \Rightarrow uv = 1$

$\boxed{v = \frac{1}{u}}$

$f(u) = u + \frac{1}{u} + 2$ 7

$f(v) = v + \frac{1}{v} + 2 = \frac{1}{u} + u + 2$

$f(u) + f(v) = 2\left(\frac{1}{u} + u + 2\right) = 2\left(u + \frac{1}{u}\right) + 4 \Rightarrow \boxed{2\left(\sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}}\right) + 4}$

$\xrightarrow{x} 2f(x) - 3f(-x) = 4x^2 - x \xrightarrow{\times 2} 4f(x) - 6\cancel{f(-x)} = 8x^2 - 2x$

$\xrightarrow{-x} 2f(-x) - 3f(x) = 4x^2 - x \xrightarrow{\times 3} 6\cancel{f(-x)} - 9f(x) = 12x^2 + 3x$

$-5f(x) = 20x^2 + x$ 8

$f(x) = \frac{20x^2 + x}{-5}$

$f(x) = -4x^2 - \frac{x}{5}$

$\xrightarrow{x=0} 2f(0) = 3m - 1$

$\xrightarrow{x=-2} 6f(0) = \underbrace{16 + 2m + 3m - 1}_{16 + 5m - 1 = 15 + 5m}$ $\longrightarrow \begin{cases} 2f(0) = 3m - 1 \\ 6f(0) = 15 + 5m \end{cases}$ 9

در صورت تفریق $\Rightarrow 4f(0) = 16 + 2m \longrightarrow f(0) = 4 + \frac{m}{2}$

$\Longrightarrow 8f(0) = 8m + 14 \longrightarrow f(0) = m + \frac{14}{8}$ در صورت جمع

$\Longrightarrow 4 + \frac{m}{2} = m + \frac{7}{4} \longrightarrow 8 + m = 2m + \frac{7}{2}$

$\boxed{f(0) = 4 + \frac{9}{4} = \frac{25}{4}} \Longleftarrow m = \frac{9}{2}$

$ax + b + a\left(\frac{1}{x}\right) + b = ax + \frac{a}{x} + 2b$

$f(x) + f\left(\frac{1}{x}\right) = \frac{3x^2}{x} - \frac{12x}{x} + \frac{3}{x} = 3x - 12 + \frac{3}{x}$

$ax + \frac{a}{x} + 2b = 3x + \frac{3}{x} - 12$ $\quad f(x) = ax + b = 3x - 6$ 10

$\Longrightarrow \boxed{a = 3}$ و $\boxed{b = -6}$ $\quad \boxed{f(-1) = 3(-1) - 6 = -9}$