نام و نام خانوادگی ...نسرین ابهری... پاسخنامه تشریحی تکلیف شماره ...(۴)... کلاس ...یازدهم تجربی (B) پنجشنبه

۱

الف) $\frac{x-1}{x}-\frac{x}{x-1}=\frac{(x-1)^2-x^2}{x(x-1)}=\frac{x^2+1-2x-x^2}{x(x-1)}\rightarrow\frac{1-2x}{x(x-1)}\geqslant 0$

	0		$\frac{1}{2}$		1	
$+$		$-$		$+$		$-$

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

ب) $x+1\neq 0\Rightarrow x\neq -1\ ,\ x\neq 0\ ,\ x-1\neq 0\rightarrow x\neq 1\ ,\ x+2\neq 0\rightarrow x\neq -2$

$\frac{3}{x-1}+\frac{1}{x+2}=\frac{3x+6+x-1}{(x-1)(x+2)}=\frac{4x+5}{(x-1)(x+2)}\neq 0\Rightarrow 4x+5\neq 0\Rightarrow x\neq -\frac{5}{4}\rightarrow D_f=\mathbb{R}-\{-1,0,1,-2,-\frac{5}{4}\}$

۲

الف) $((\frac{1}{3})^x-9)(32-4^x)\geqslant 0$ ریشه‌ها : $(\frac{1}{3})^x-9=0\rightarrow(\frac{1}{3})^x=3^2\Rightarrow x=-2$

$32-4^x=0\rightarrow 2^5=2^{2x}\Rightarrow x=\frac{5}{2}$

	-2		$\frac{5}{2}$	
$+$		$-$		$+$

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

ب) $\sqrt{y+1}=3-\sqrt[4]{x-1}\Rightarrow 3-\sqrt[4]{x-1}\geqslant 0\Rightarrow\sqrt[4]{x-1}\leqslant 3\Rightarrow x-1\leqslant 81\Rightarrow x\leqslant 82$

۳

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

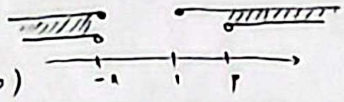
	-1		2	
$+$		$-$		$+$

$\Rightarrow D_1=(-\infty,-1)\cup(2,+\infty)$

II) $x^2-1\geqslant 0\Rightarrow$

	-1		1	
$+$		$-$		$+$

$\Rightarrow D_2=(-\infty,-1]\cup[1,+\infty)$



$D_f=D_1\cap D_2=(-\infty,-1)\cup(2,+\infty)$

۴

$3+ax-x^2\geqslant 0$: به ازای -2 صفر شود $\Rightarrow 3-2a-4=-1-2a=0\Rightarrow 2a=-1\Rightarrow a=\frac{-1}{2}$

به ازای b صفر شود $\Rightarrow 3-\frac{1}{2}b-b^2=0\Rightarrow 12-2b-4b^2=0$

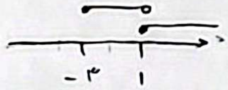
$\rightarrow 4b^2+3b-12=0=(2b+4)(2b-3)\Rightarrow b=-2\ ,\ \frac{3}{2}$

چون : $b>-2\Rightarrow b=\frac{3}{2}\quad a+b=\frac{3}{2}-\frac{1}{2}=1$

۵

$f(x)-x\geqslant 0\begin{cases}x\geqslant 1\ :\ 3x-2-x\geqslant 0\Rightarrow 2x-2\geqslant 0\rightarrow 2x\geqslant 2\rightarrow x\geqslant 1 & \mathrm{I}\\ x<1\ :\ 2x+3-x\geqslant 0\Rightarrow x+3\geqslant 0\rightarrow x\geqslant -3\longrightarrow -3\leqslant x<1 & \mathrm{II}\end{cases}$

$\longrightarrow D_g=D_1\cup D_2=[-3,+\infty)$



$$f(5) = (a+1)(5+2) = 7(a+1) = 7a+7$$
$$f(-2) = 3a + 2(-2) = 3a - 4$$
$$2(7a+7) = (3a-4) + a \Rightarrow 14a+14 = 4a-4 \Rightarrow \overset{5}{\cancel{10}}a = \overset{-9}{\cancel{-18}} \rightarrow a = -\frac{9}{5}$$ ۶

$$2-\sqrt{3} = x \ , \ \frac{1}{x} = \frac{1}{2-\sqrt{3}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}} = \frac{2+\sqrt{3}}{4-3} = 2+\sqrt{3}$$
$$\Big(\sqrt{2-\sqrt{3}} + \underbrace{\frac{1}{\sqrt{2-\sqrt{3}}}}_{\sqrt{2+\sqrt{3}}} + 2\Big) + \Big(\sqrt{2+\sqrt{3}} + \underbrace{\frac{1}{\sqrt{2+\sqrt{3}}}}_{\sqrt{2-\sqrt{3}}} + 2\Big) = 2\left(\sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}} + 2\right)$$ ۷
$$\left(\sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}}\right)^2 = 2+\cancel{\sqrt{3}} + 2 - \cancel{\sqrt{3}} + 2\big(\underbrace{\sqrt{4-3}}_{1}\big) = 6 \Rightarrow \sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}} = \pm\sqrt{6} \rightarrow \text{قابل قبول } +\sqrt{6}$$
$$\Rightarrow 2(\sqrt{6}+2) = \boxed{2\sqrt{6}+4}$$

$$2 \times \left(2f(x) - 3f(-x) = 4x^2 - x\right)$$
$$3 \times \left(2f(-x) - 3f(x) = 4x^2 + x\right)$$
$$\Rightarrow \left.\begin{array}{l} 4f(x) - 6f(-x) = 8x^2 - 2x \\ 6f(-x) - 9f(x) = 12x^2 + 3x \end{array}\right\} \text{جمع} \Rightarrow -5f(x) = 20x^2 + x$$ ۸
$$\Rightarrow f(x) = -4x^2 - \frac{x}{5}$$

$$x = 0 : \quad 2f(0) = 3m - 1$$
$$x = -2 : \quad -3(-2)f(0) = 6f(0) = \overset{4}{\cancel{4(-2)^2}} - m(-2) + 3m - 1 = 16 + 2m + 3m - 1 = 15 + 5m$$
$$f(0) = \frac{3m-1}{\cancel{2}} = \frac{15+5m}{\overset{3}{\cancel{6}}} \Rightarrow 9m - 3 = 15 + 5m \Rightarrow \overset{2}{\cancel{4}}m = \overset{9}{\cancel{18}} \Rightarrow m = \frac{9}{2}$$ ۹
$$f(0) = \frac{3\left(\frac{9}{2}\right) - 1}{2} = \frac{\frac{27-2}{2}}{2} = \frac{25}{4}$$

$$f(x) + f\left(\frac{1}{x}\right) = ax + b + \frac{a}{x} + b = ax + \frac{a}{x} + 2b = \frac{3x^2 - 12x + 3}{x} = 3x - 12 + \frac{3}{x}$$
$$\Rightarrow a = 3 ,\ 2b = -12 \Rightarrow b = -6 \Rightarrow f(x) = 3x - 6$$
$$f(-1) = 3(-1) - 6 = -9$$ ۱۰