۲۰

نام و نام خانوادگی ......ملیکا .... پاسخنامه تشریحی تکلیف شماره ..۵... کلاس ....یازدهم ریاضی B......

$f(x)=\left(\frac{1}{2}\right)^{x-2}-1 \to f(x+1)=\left(\frac{1}{2}\right)^{x-1}-1$ $\sqrt{x^3\times\left(\left(\frac{1}{2}\right)^{x-1}-1\right)}\geq 0$ $\to x-1=0 \to x=1$ $0 \quad 1$: $-\ 0\ +\ 0\ -$ $\to D_f=[0,1]$ ۴	۱
$f(x)=\sqrt{x+\lvert x+2\rvert} \to f(-x)=\sqrt{-x+\lvert 2-x\rvert}\geq 0 \to \lvert 2-x\rvert\geq x$ $f(-x)=\begin{cases} x\geq 2 \to x-2\geq x \to \times \\ x\leq 2 \ (2) \to 2-x\geq x \to 2x\leq 2 \to x\leq 1 \ (1)\end{cases}$ $(1)\cap(2)=(-\infty,1]$ ۴	۲
$y=\sqrt{\frac{x-1}{f(x)}}\geq 0 \to x-1=0 \to x=1$ $f(x)=0 \to x=2,3,-4$ $-4 \quad 1 \quad 2 \quad 3$: $-$ تن $+\ 0\ -$ تن $+$ تن تو نمودار نیست $D_f=(-4,1]\cup(2,3)$ ۴	۳
$y_1=\frac{1}{9x^4-7x^2-4x-3}$ $9x^4-6x^2-x^2-4x-4+1=(9x^4-6x^2+1)-(x^2+4x+4)=(3x^2-1)^2-(x+2)^2$ $(3x^2-1)^2-(x+2)^2=0 \to (3x^2-1)^2=(x+2)^2 \to 3x^2-1=x+2 \to 3x^2-x-3=0$ $3x^2+ax+b=3x^2-x-3 \to a=-1,\ b=-3$ $\sqrt{-(a+b)}=\sqrt{4}=2$ ۴	۴
$f(x)=x^3+x \qquad y=\sqrt{f(x)-f\left(\frac{4}{x}\right)} \to f\left(\frac{4}{x}\right)=\left(\frac{4}{x}\right)^3+x=\frac{64}{x^3}+x$ $f(x)-f\left(\frac{4}{x}\right)=x^3+\cancel{x}-\cancel{x}-\frac{64}{x^3} \to x^3-\frac{64}{x^3}=$ $\frac{x^6-64}{x^3}\geq 0 \to \frac{(x^2-4)(x^4+16+4x^2)}{x^3}\geq 0$ همیشه مثبت $\to +$ $\frac{x^2-4}{x^3}\geq 0$ ۴	۵

$-2 \quad 0 \quad 2$: $-\ 0\ +$ تن $-\ 0\ +$ $\to D_f=[-2,0)\cup[2,+\infty)$

$f(x^3+x) = 2x^2 - 1 \to f(2):\ x^3+x = 2 \to x = 1 \to 2x^2 - 1 = 1$ ۶

$f(10):\ x^3+x = 10 \to x = 2 \to 2x^2 - 1 = 7$

$f(2) + f(10) = \underline{7 + 1 = 8}$

$f(x) = x^3 - 6x^2 + 12x + 8 - 8,\quad g(x) = x^3 + 9x^2 + 27x + 27 - 27$ ۷

$f(x) = (x-2)^3 + 8 \qquad g(x) = (x+3)^3 - 27$

$f(\sqrt[3]{2} + 2) = (\sqrt[3]{2} + 2 - 2)^3 + 8 = 10 \qquad g(\sqrt[3]{7} - 3) = (\sqrt[3]{7} - 3 + 3)^3 - 27 = -20$

$\dfrac{-20}{10} = \underline{-2}$

$f(x) = \sqrt{x + 4\sqrt{x-4}},\ g(x) = \sqrt{x - 4\sqrt{x-4}} + 4 - 4 \to f(x) = \sqrt{(x-4) + 4\sqrt{x-4} + 4} =$ ۸

$f(x) = \sqrt{(\sqrt{x-4} + 2)^2} = \sqrt{x-4} + 2 \qquad g(x) = \sqrt{(x-4) - 4\sqrt{x-4} + 4} = \sqrt{(\sqrt{x-4} - 2)^2} =$

$g(x) = \sqrt{x-4} - 2 \qquad f(x) + g(x) = 2\sqrt{x-4} \to a = 0,\ b = 2,\ c = -4 \qquad \dfrac{a+b}{c} = \dfrac{0+2}{-4} = \underline{-\dfrac{1}{2}}$

$f(x) = \dfrac{x+2}{x^2 - 4x + 3},\ g(x) = \{(2,1), (1,0), (3,5), (0,4)\} \to f(x) = \{(2,-4), (1, \text{تن}), (3, \text{تن}), (0, \tfrac{2}{3})\}$ ۹

$\dfrac{g}{f} = \{(2, \tfrac{-1}{4}),\ \cancel{(1, \tfrac{0}{\text{تن}})},\ \cancel{(3, \tfrac{5}{\text{تن}})},\ (0, \dfrac{4}{\tfrac{2}{3}})\} = \underline{\{(2, -\tfrac{1}{4}), (0, 6)\}}$

الف) $f(2x) = \{(\tfrac{1}{2}, 2), (\tfrac{3}{2}, -1), (2, 2), (-\tfrac{1}{2}, 6)\}$ ۱۰

$2x = 1 \to x = \tfrac{1}{2}$

ب) $f(x^2) = \{(1,2), (-1,2), (\sqrt{3}, -1), (-\sqrt{3}, -1), (2,2), (-2,2)\}$

ج) $2g^2(x) + 1 = \{(-2, 19), (1, 3), (3, 9), (-1, 1)\}$

د) $\dfrac{2f}{g} \to f(x) \cap g(x) = \{-1, 3, -1\} = \{(1, \tfrac{4}{-1}), (3, \tfrac{-2}{-2}), \cancel{(-1, \tfrac{11}{0})}\} =$

$\underline{\{(1, -4), (3, -1)\}}$