نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس ..... دختر A

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

$y = \sqrt{x^2 \times 2^{1-x} - 1} \rightarrow x^2 \times 2^{1-x} - 1 \geq 0 \rightarrow x^2 \times 2^{1-x} - 1 \geq 0$

	0		1	
	−	0	+	0

$D_f = [0,1]$

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$f(-x) = \sqrt{-x+|-x+2|} \rightarrow -x+|-x+2| \geq 0 \rightarrow 2-2x \geq 0 \rightarrow 2x \leq 2 \rightarrow x \leq 1$

غ ق ق $x < 2$

$D_f = (-\infty, 1]$

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$y = \sqrt{\frac{x-1}{f(x)}}$ $\quad \frac{x-1}{f(x)} \geq 0$

	−۴		۱		۲		۳	
	−	0	+	0	−	∄	+	0

$D_f = (-4,1] \cup (2,3)$

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$9x^4 - 7x^2 - 4x - 3 = (3x^2-1)^2 - (x+2)^2$

$9x^4 - 6x^2 + 1 - x^2 - 4x - 4$

$3x^2 - 1 \neq x+2 \rightarrow 3x^2 - x - 3$

$3x^2 - x - 3 = 3x^2 + ax + b$

$a = -1 \quad b = -3$

$\sqrt{-(a+b)} = \sqrt{-(-1-3)} = \sqrt{4} = 2$

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$\sqrt{x^2 + x - \frac{4}{x^2} + \frac{4}{x}}$ $\quad \frac{x^4 + x^3 - 4x^2 - 4}{x^2} \geq 0$ $\quad x^2 = t$ $\rightarrow$

$x^2 \rightarrow x \neq 0$

$t^3 + t^2 - 4t - 4 \rightarrow (t^3 - 4t) + (t^2 - 4t) = (t-4)(t^2 + 4t + 4) + t(t-4) =$

$(t-4)(t^2 + 5t + 4)$

$\Delta < 0$ همواره مثبت

$\rightarrow t = 4 \rightarrow x^2 = 4 \quad x = \pm 2$

	−۲		۰		۲	
	+	∄	−	0	+	

$D_f = [-2,0) \cup [2,+\infty)$

$x^3+x=2 \rightarrow x=1 \rightarrow f(2)=1$ $x^3+x=10 \rightarrow x=2 \rightarrow f(10)=7$ $f(2)+f(10)=8$	۶
$f(x)=(x-2)^3 = x^3-6x^2+12x-8+8 \Rightarrow f(x)=(x-2)^3+8$ $g(x)=x^3+9x^2+27x+27-27 \Rightarrow g(x)=(x+3)^3-27$ $g(\sqrt[3]{7}-3) \rightarrow (\sqrt[3]{7}+3-3)^3-27=-20$ $f(\sqrt[3]{2}+2-2)+8=10$ $\dfrac{g(\sqrt[3]{7}-3)}{f(\sqrt[3]{2}+2)} = \dfrac{-20}{10} = -2$	۷
$f(x)=\sqrt{(x-4)+4\sqrt{x-4}+4} = \sqrt{(\sqrt{x-4}+2)^2} \xrightarrow{x\geq 4} = \lvert\sqrt{x-4}+2\rvert = \sqrt{x-4}+2$ $g(x)=\sqrt{(x-4)-4\sqrt{x-4}+4} = \sqrt{(\sqrt{x-4}-2)^2} \xrightarrow{x\geq 8} \lvert\sqrt{x-4}-2\rvert = \sqrt{x-4}-2$ $f(x)+g(x)=\sqrt{x-4}+2+\sqrt{x-4}-2 = 2\sqrt{x-4} \Rightarrow a=0 \quad b=2 \quad c=-4$ $\dfrac{a+b}{c}=\dfrac{2}{-4}=-\dfrac{1}{2}$	۸
$\dfrac{g}{f} = D_g \cap D_f - \{x \mid f(x)=0\} \rightarrow \dfrac{g}{f} = \{(2,-\frac{1}{4})$ ~~$(1,\frac{2}{0})$~~ محال ~~$(3,\frac{2}{0})$~~ محال $(0,9)\}$	۹
$f(2x)=\{(\frac{1}{2},2)(\frac{3}{2},-1)(2,2)(-\frac{1}{2},9)\}$ $f(x^2)=\{(1,2)(\sqrt{3},-1)(2,2)$ ~~$(\sqrt{-1},9)$~~ محال $\}$ $2g^2(x)+1=\{(-2,19)(1,3)(3,9)(-1,1)\}$ $\dfrac{2f}{g}=\{(1,-4)(3,-1)$ ~~$(-1,\frac{12}{0})$~~ محال $\}$	۱۰