نام و نام خانوادگی ....سبا غیبی.... پاسخنامه تشریحی تکلیف شماره (۵).... کلاس گروه B یازدهم دختران

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$f(x) = \left(\frac{1}{2}\right)^{x-2} - 1 \qquad D_f \Rightarrow y = \sqrt{x^3 \times f(x+1)} \quad D_f : [0, 1]$

$f(x+1) = \left(\frac{1}{2}\right)^{(x+1)-2} - 1 \Rightarrow \left(\left(\frac{1}{2}\right)^{x-1} - 1\right) \times x^3 \geq 0$

1) $x = 1$ حاصل ضرب $= 0$

2) $0 < x < 1$, $0 < x^3$, حاصل ضرب $+$

3) $x = 0$ حاصل ضرب $= 0$

$[0, 1]$

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$f(x) = \sqrt{x + |x+2|} \qquad f(-x) \Leftarrow D_f = ? \quad (-\infty, 1]$

$\sqrt{-x + |-x+2|} = \sqrt{-x + |2-x|}$

$-x + |2-x| \geq 0 \Rightarrow |2-x| = \begin{cases} 2-x & x \leq 2 \\ x-2 & x > 2 \end{cases}$

② $-x + (x-2) \Rightarrow -2 < 0$, $x > 2$ ✗ $\Longrightarrow x \leq 2$

$x \leq 2$ ① $2 - 2x \geq 0 \Rightarrow -2x \geq -2 \Rightarrow x \leq 1$

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

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

		-4		1		2		3	
$x-1$	$-$		$-$	0	$+$		$+$		$+$
$f(x)$	$+$	0	$-$		$-$	0	$+$	0	$-$
کل	$-$	$\nexists$	$+$	0	$-$	$\nexists$	$+$	$\nexists$	$-$

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$y_1 = \frac{1}{9x^4 - 7x^2 - 4x + 3} \qquad y_2 = \frac{1}{3x^2 + ax + b}$

$(3x^2 + x + 1)(3x^2 + x - 3)$

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

$3x^2 + ax + b = (3x^2 + x + 1)(3x^2 + x - 3)$

1) $a = b = 1 \Rightarrow \sqrt{-2}$ ✗ تعریف نشده

2) $a = 1, b = -3 \Rightarrow \sqrt{-(-2)}$ ✓

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$\sqrt{\frac{(x^3 + x)^2}{x^2 + x} - \frac{4}{x^2 + x}} \rightarrow x^3 + x = \frac{4}{x}, \; \frac{64}{x} \Longrightarrow x^6 + x^4 - 4x^2 - 64 = 0$

$(x^2 - 4)(x^4 + 16 + 4x^2) + x^2(x^4 - 4) \rightarrow (x^2 - 4)(x^4 + 16 + 5x^2)$ همواره مثبت

$x^2 \geq 4 \rightarrow |x| \geq 2 \rightarrow$ 1) $x \geq 2$, 2) $x \leq -2$

$D_f = R - [-2, 2]$

$f(2)+f(10)=8$ (circled)

$x^3+x=2 \Rightarrow x=1$

$x^3+x=10 \Rightarrow x=2$

$(2\times1)+(8-1)$

$2x^2-1 \Rightarrow 2=x \Rightarrow 7$

$2x^2-1 \Rightarrow 1=x \Rightarrow 1$ ۶

$\dfrac{g(\sqrt[3]{7}-3)}{f(\sqrt[3]{2}+2)}=? \quad \dfrac{-20}{10}=-2$ (circled)

$(\sqrt[3]{2}+2)^3-6(\sqrt[3]{2}+2)^2+12(\sqrt[3]{2}+2)=$

$2+8+6(\sqrt[3]{2})^2+12\sqrt[3]{2}-6((\sqrt[3]{2})^2+4+4\sqrt[3]{2})+12\sqrt[3]{2}+24 = 10$ ۷

$(\sqrt[3]{7}-3)^3+9(\sqrt[3]{7}-3)^2+27(\sqrt[3]{7}-3)$

$7-27-9(\sqrt[3]{7})^2+27\sqrt[3]{7}+9(\sqrt[3]{7})^2+81-54\sqrt[3]{7}+27\sqrt[3]{7}-81 = -20$

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

$x\geq 4 \quad f(x)=\sqrt{x+4\sqrt{x-4}}$

$g(x)=\sqrt{x-4\sqrt{x-4}}$ ۸

$\sqrt{x-4+4\sqrt{x-4}+4}+\sqrt{x-4-4\sqrt{x-4}+4}$

$(\sqrt{x-4}+2)^2 + (\sqrt{x-4}-2)^2 \Rightarrow 2\sqrt{x-4}$

$\dfrac{a+b}{c}=? \quad \dfrac{-1}{2}$ (circled)

$\dfrac{g}{f}=\{(0,9)\ (2,\tfrac{1}{-4})\}$

$g(x)\Rightarrow x\in\{0,1,2,3\}$

$f(x)\Rightarrow x\notin\{1,3\} \Rightarrow D_f=\{0,2\}$ ۹

$f(0)=\dfrac{0+2}{(0)^2-4\times0+3}=\dfrac{2}{3}$

$f(2)=\dfrac{2+2}{(2)^2-(2\times4)+3}=-4$

$g(x)=(0,6) \Rightarrow \dfrac{6}{\frac{2}{3}}=9$

$g(x)=(2,1) \Rightarrow \dfrac{1}{-4}$

الف) $f(2x)=\{(\tfrac{1}{2},2)(\tfrac{3}{2},-1)(2,2)(-\tfrac{1}{2},9)\}$

ب) $f(x^2)=\{(1,2)(\sqrt{3},-1)(2,2)\}$ ۱۰

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

د) $\dfrac{2f}{g}=\{(1,-4)(3,-1)\}$