روژانو صدرالعلمایی ۲۰ یازدهم دختر C تکلیف ۵

$f(x)=\left(\frac{1}{2}\right)^{x-2}-1 \qquad y=\sqrt{x^3 f(x+1)}\geq 0 \to$ دامنه؟ ۱- ک

$\underbrace{x^3}_{0}\ \underbrace{f(x+1)}_{1}\geq 0 \qquad f(x+1)=\frac{1}{2}^{x+1-2}-1=\frac{1}{2}^{x-1}-1=0 \qquad \frac{1}{2}^{x-1}=1 \qquad 2^{-(x-1)}=2^0$

$-x+1=0 \qquad \boxed{x=1}$

	0		1	
−		+		−

جواب ← $\boxed{D_y=[0,1]}$

$f(x)=\sqrt{x+|x+2|} \quad . \quad D_f \to f(-x)$ ۲- ک

$f(-x)=\sqrt{-x+|2-x|}\geq 0 \qquad -x+|2-x|\geq 0 \qquad |2-x|\geq x \qquad (2-x)^2\geq x^2$

$4+\cancel{x^2}-4x\geq \cancel{x^2} \qquad 4\geq 4x \qquad 1\geq x$

جواب ← $\boxed{D_f=(-\infty,1]}$

دامنه $\to y=\sqrt{\frac{x-1}{f(x)}}\geq 0 \qquad \frac{x-1}{f(x)}\geq 0$ ۳- ک

$x-1 \to x=1 \qquad f(x) \to f(x)=0 \to 2, 3, -4$

	−4		1		2		3	
−		+		−		+		−

جواب ← $\boxed{D_f=(-4,1]\cup(2,3)}$

$y_1=\frac{1}{9x^4-7x^2-4x-3} \qquad y_2=\frac{1}{3x^2+ax+b} \qquad D_{y_1}=D_{y_2} \qquad \sqrt{-(a+b)}=?$ ۴- ک

$9x^4-7x^2-4x-3=(9x^4-6x^2+1)-x^2-4x-4 \Rightarrow (3x^2-1)^2-(x+2)^2\neq 0$

$(3x^2-1)^2\neq(x+2)^2 \to 3x^2-1\neq x+2 \Rightarrow 3x^2-x-3\neq 0$

$3x^2-x-3=3x^2+ax+b \Rightarrow a=-1 \quad b=-3$

$\sqrt{\cancel{-(-1-3)}}=\boxed{2}$ (4)

جواب

$f(x)=x^3+x \qquad y=\sqrt{f(x)-f\left(\frac{4}{x}\right)}\geq 0 \to$ دامنه؟ ۵- ک

$\sqrt{x^3+x-\frac{64}{x^3}-\frac{4}{x}}$

$=\sqrt{\frac{1}{x^3}(x^6-64)+\frac{1}{x}(x^2-4)}$

$=\sqrt{\frac{1}{x^3}(x^2-4)(x^4+16+4x^2)+\frac{1}{x}(x^2-4)}$

$=\sqrt{\frac{1}{x}(x^2-4)\left(\frac{1}{x^2}(x^4+16+4x^2)+1\right)}$

$=\sqrt{\underbrace{\frac{1}{x}}_{0}\underbrace{(x^2-4)}_{\pm 2}\underbrace{\left(x^2+\frac{16}{x^2}+5\right)}_{\text{همواره مثبت}}}\geq 0$

	−2		0		2	
−		+		−		+

جواب ← $\boxed{D_y=[-2,0)\cup[2,+\infty)}$

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$f(x^3+x)=2x^2-1$ $\quad f(2)+f(10)=?$ $\quad 1+7=\boxed{8}$ جواب

$x^3+x=2$ $\quad x(x^2+1)=2 \to 1\times 2$, $\to -1\times -2$

$\boxed{x=1}$ $\quad 1(1+1)=2$

$x=-1$ $\quad -1(1+1)\cancel{=2}$ غ ق ق

$f(2)=2(1)^2-1=\boxed{1}$

$x^3+x=10$

$x(x^2+1)=10 \to 2\times 5$, -2×-5, 1×10, -1×-10 } غ ق ق

$\boxed{x=2} \to 2(4+1)=10$

$f(10)=2(2)^2-1=\boxed{7}$

د

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$f(x)=x^3-6x^2+12x-8+8$

$(x-2)^3+8$

$f(\sqrt[3]{2}+2) \longrightarrow (\sqrt[3]{2}+\cancel{2}-\cancel{2})^3+8$

$10=2+8$

$g(x)=x^3+9x^2+27x+27-27$

$(x+3)^3-27$

$g(\sqrt[3]{7}-3)=(\sqrt[3]{7}\cancel{-3}\cancel{+3})^3-27$

$-20=7-27$

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

جواب

د

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

$2\times 2\times\sqrt{x-4}$

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

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

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

$f(x)=\sqrt{(\sqrt{x-4}+2)^{\cancel{2}}}=|\sqrt{x-4}+2|$

$g(x)=\sqrt{x-4\sqrt{x-4}}$

$2\times 2\times\sqrt{x-4}$

$g(x)=\sqrt{(\sqrt{x-4}-2)^{\cancel{2}}}$

$g(x)=|\sqrt{x-4}-2|$

$f(x)+g(x)=a+b\sqrt{x+c}$

$\dfrac{a+b}{c}=?$ $\quad \dfrac{0+2}{-4}=\boxed{\dfrac{-1}{2}}$

$|\sqrt{x-4}+2|+|\sqrt{x-4}-2|$

$=\sqrt{x-4}+2+\sqrt{x-4}+2=2\sqrt{x-4}$

$a+b\sqrt{x+c}=2\sqrt{x-4}$

$a=0$ $\quad b=2$ $\quad c=-4$

د

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

$(x-1)(x-3)$

$x\neq 1,\ 3$ $\quad D_f=\mathbb{R}-\{1,3\}$

$g(x)=\{(2,1),\cancel{(1,0)},\cancel{(3,5)},(0,4)\}$

$\to f(2)=\dfrac{4}{(1)(-1)}=-4$

$\to f(0)=\dfrac{2}{(-1)(-3)}=\dfrac{2}{3}$

$\dfrac{g}{f}=?$

$\{(2\ \tfrac{1}{-4})(0\ \tfrac{4}{\frac{2}{3}})\}\Rightarrow$

$\{(2,-\tfrac{1}{4})(0,6)\}$ جواب

د

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

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

د

ج) $2g^2(x)+1$

$\{(-2,19)(1,3)(3,9)(-1\ \ )\}$

د) $\dfrac{2f}{g}=\{(1\ \tfrac{4}{-1})(3\ \tfrac{-2}{2})\cancel{(\ \ )}\}$

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