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نام و نام خانوادگی ......ایران شریفی...... پاسخنامه تشریحی تکلیف شماره ...۶... کلاس ...A...

$f(x)=\left(\frac{1}{2}\right)^{x-2}-1$ $\left(\frac{1}{2}\right)^{x-2}-1\geq 0 \to \left(\frac{1}{2}\right)^{x-2}=1 \to x=2$ $x>2 \to f(x)<0$ $x<2 \to f(x)\geq 0$ $y=\sqrt{x^3 f(x+1)}$ $x+1>2 \to x>1 \to f(x)<0$ $x^3 \to x<0 \to x^3<0$ $x+1\leq 2 \to x\leq 1 \to f(x)\geq 0$ (1) $x^3 \to x\geq 0 \to x^3\geq 0$ (2) هر دو باید مثبت باشند $D=[0,1]$ ۵	۱
$f(x)=\sqrt{x+\lvert x+2\rvert} \to f(-x)$ داریم $-x+\lvert -x+2\rvert \to$ $x>2 \to -x+x-2\geq 0 \quad x\in\varnothing$ $x\leq 2 \to -2x+2\geq 0 \to x\leq 1 \to D=(-\infty,1]$ ۵	۲
$y=\sqrt{\frac{x-1}{f(x)}}$ $x-1$: − − − 0 + + + $f(x)$: + − − + $\frac{x-1}{f(x)}\geq 0 \to D=(-4,1]\cup(2,3)$ ۵	۳
$y_1=\frac{1}{9x^4-7x^2-4x-3}$ $D_{y_1}=D_{y_2}$ $y_2=\frac{1}{3x^2+ax+b}$ $(3x^2+ax+b)(3x^2+cx+d)=9x^4-7x^2-4x-3$ $9x^4+3(a+c)x^3+(ac+3b+3d)x^2+(ad+bc)x+bd$ $a+c=0 \to a=-c \to c=1 \quad a=-1$ $ad+bc \to -cd+bc=c(b-d)=-4 \quad b-d=-4$ $ac+3b+3d=-7 \to -1+3(b+d)=-7 \quad b+d=-2$ $b-d=-4,\ b+d=-2 \to d=1,\ b=-3$ $\sqrt{-(a+b)}=\sqrt{-(-3-1)}=2$ ۵	۴
$f(x)=x^3+x$ $y=\sqrt{f(x)-f\left(\frac{4}{x}\right)}$ $f(x)-f\left(\frac{4}{x}\right)\geq 0$ $f(x)\geq f\left(\frac{4}{x}\right) \to x^3+x\geq\left(\frac{4}{x}\right)^3+\frac{4}{x}$ $\left(x^3+x\geq\frac{64+4x^2}{x^3}\right)\times x^3,\ x\neq 0$ $x^6+x^4-4x^2-2^6\geq 0 \quad x=\pm 2$ ریشه‌ها $x^2=4 \to x=\pm 2$ $x^6+x^4-4x^2-2^6 \div (x^2-4) = x^4+5x^2+16$, $\Delta<0$ $D_f=[-2,0)\cup[2,+\infty)$ ۵	۵

$f(x^3+x)=2x^2-1$ $f(2)+f(10)=?$ $x^3+x=2 \to x^3+x-2=0$ $(x^2+x+2)(x-1)=0$ $\underline{x=1}$ $\quad \underline{f(2)=1}$ $x=2 \to f(10)=2\times4-1=7 \leftarrow$ $x(x^2+1)=10$: 1×10 ✗, $2\times5 \to \underline{x=2}$ $x^3+x=8+2=10$ $f(2)+f(10)=1+7=8$	۶
$f(x)=x^3-6x^2+12x \to x^3-6x^2+12x-8+8 \to (x-2)^3+8$ $g(x)=x^3+9x^2+27x \to x^3+3\times3\times x^2+3\times3^2\times x+27-27 \to (x+3)^3-27$ $\dfrac{g(\sqrt[3]{7}-3)}{f(\sqrt[3]{2}+2)}=\dfrac{(\sqrt[3]{7}-3+3)^3-27}{(\sqrt[3]{2}+2-2)^3+8}=\dfrac{-20}{10}=\underline{-2}$	۷
$f(x)=\sqrt{x+4\sqrt{x-4}}=\sqrt{(x-4)+4\sqrt{x-4}+4}=\sqrt{(\sqrt{x-4}+2)^2}=\lvert\sqrt{x-4}+2\rvert$ $g(x)=\sqrt{x-4\sqrt{x-4}}=\sqrt{(x-4)-4\sqrt{x-4}+4}=\sqrt{(\sqrt{x-4}-2)^2}=\lvert\sqrt{x-4}-2\rvert$ $\lvert\sqrt{x-4}+2\rvert+\lvert\sqrt{x-4}-2\rvert=a+b\sqrt{x+c}$ $x\geq4 \to$ ... $\sqrt{x-4}+2+\sqrt{x-4}-2=a+b\sqrt{x+c}=2\sqrt{x-4}=a+b\sqrt{x+c}$ $\dfrac{a+b}{c}=\dfrac{0+2}{-4}=-\dfrac{1}{2}$ $a=0$, $b=2$, $c=-4$	۸
$f(x)=\dfrac{x+2}{x^2-4x+3}$ $\quad g(x)=\{(2,1),(1,0),(3,5),(0,4)\}$ $\dfrac{g}{f}=\{(2,-\frac{1}{4}),\cancel{(1,\frac{0}{\ })},\cancel{(3,\frac{5}{0})},(0,\frac{4}{\frac{2}{3}}=6)\}$ $f(2)=\dfrac{4}{2^2-8+3}=-4$ $\quad f(3)=\dfrac{5}{9-12+3}=0$ $f(1)=\dfrac{3}{1-4+3}=$ ✗ $\quad f(0)=\dfrac{2}{3}$	۹
$f(x)=\{(1,2),(3,-1),(4,2),(-1,6)\}$ $\quad g(x)=\{(-2,3),(1,-1),(3,2),(-1,5)\}$ $f(2x)=\{(\frac{1}{2},2),(\frac{3}{2},-1),(\frac{4}{2},2),(-\frac{1}{2},6)\}$ $\quad (2,2)$ $f(x^2)=\{(\sqrt{1},2),(\sqrt{3},-1),(\sqrt{4},2),\cancel{(\sqrt{-1},6)}\}$ $\quad (1,2)\quad(2,2)\quad \varnothing$ $\to \{(\sqrt{1},2),(-\sqrt{1},2),(-\sqrt{3},-1),(\sqrt{3},-1),(2,2),(-2,2)\}$ $2g^2(x)+1=\{(-2,19),(1,3),(3,9),(-1,1)\}$	

$\dfrac{2f}{g}=\{(1,\frac{2\times2}{-1}),(3,\frac{-1\times2}{2}),\cancel{(-1,\ldots)}\}$ $\quad (3,-1)$