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نام و نام خانوادگی ... پاسخنامه تشریحی تکلیف شماره ۴ کلاس ...

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الف) $f(x)=\sqrt{\frac{x-1}{x}-\frac{x}{x-1}}$ $\frac{(x-1)^2-x^2}{x(x-1)}\geq 0$ $\frac{x^2+1-2x-x^2}{x(x-1)}\geq 0$

$D_f=(-\infty,0)\cup[\frac{1}{2},1)$

ب) $f(x)=\frac{\frac{1}{x+1}-\frac{2}{x}}{\frac{2}{x-1}+\frac{1}{x+2}}$ $x\neq -1,\ x\neq 1,\ x\neq 0,\ x\neq -2$ $\frac{2}{x-1}+\frac{1}{x+2}\neq 0$ $\frac{3}{x-1}\neq\frac{1}{-x-2}$

$-3x-6\neq x-1$ $x\neq -\frac{5}{4}$ $D_f=\mathbb{R}-\{-2,-\frac{5}{4},-1,0,1\}$

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الف) $f(x)=\sqrt{(3^x-9)(\frac{1}{3}^x-\frac{1}{9})}$ $(\frac{1}{3}^x-3^2)(2^5-2^{3x})\geq 0$

$D_f=(-\infty,2]\cup[\frac{5}{3},+\infty)$

ب) $\sqrt[4]{x-1}+\sqrt{y+1}=3$ $x-1\geq 0$ (I) $x\geq 1$

$\sqrt{y+1}=-\sqrt[4]{x-1}+3$ $-\sqrt[4]{x-1}+3\geq 0$ $x-1\leq 81$ (II) $x\leq 82$

$D_f=[1,82]$

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$f(x)=\frac{\log_4^{(x^2-x-2)}}{\sqrt{x^2-1}+1}$ $x^2-x-2>0$ $(x-1)(x+1)$ (I)

$x^2-1\geq 0$ II

$\sqrt{x^2-1}+1\neq 0$ همواره برقرار III

$D_f=(-\infty,-1)\cup(2,+\infty)$

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$y=\sqrt{3+ax-x^2}$ $D=[-2,b]$

$-4+3-2a=0$ $-2a=1$ $a=-\frac{1}{2}$

$-x^2-\frac{x}{2}+3\geq 0$ $b=\frac{3}{2}$

$\frac{c}{a}=-3$ $\frac{c}{-2}=\frac{3}{2}$ $c=3$

$a+b=\frac{3}{2}-\frac{1}{2}=1$

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$f(x)=\begin{cases}2x-2 & x\geq 1\\ 3x+3 & x<1\end{cases}$ $g(x)=\sqrt{f(x)-x}$

$f(x)-x\geq 0$ $-3\ \ 1$ $-\ +\ +$

$3x-2=x$ $2x=2$ $x=1$

$3x+3=x$ $2x=-3$ $x=-3$

$D_g=[-3,+\infty)$

$$f(x)=\begin{cases}(a+1)(x+2) & x>1\\ 2a+2x & x\le 1\end{cases}$$

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$f(a)=(a+2)(a+1)=2a+2$ $\quad f(-2)=2a-4$

$2f(a)=f(-2)+a$

$2a+2=2a-4$ $\quad a=\frac{-14}{10}=\frac{-9}{5}$

$f(x)=\sqrt{x}+\frac{1}{\sqrt{x}}+2$ $\quad f(2-\sqrt{2})=\sqrt{2-\sqrt{2}}+\frac{1}{\sqrt{2-\sqrt{2}}}+2$

$f(2+\sqrt{2})=\sqrt{2+\sqrt{2}}+\frac{1}{\sqrt{2+\sqrt{2}}}+2$ $\quad f(2-\sqrt{2})+f(2+\sqrt{2})=$

$=\sqrt{\frac{(1-\sqrt{2})^2}{2}}+\sqrt{\frac{2}{(1-\sqrt{2})^2}}+2+\sqrt{\frac{(1+\sqrt{2})^2}{2}}+\sqrt{\frac{2}{(1+\sqrt{2})^2}}+2=4+\frac{\sqrt{2}-1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}-1}+\frac{\sqrt{2}+1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}+1}$ ۷

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

$2f(x)-2f(-x)=4x^2-2x$

$2f(-x)-2f(x)=4x^2+2x$

$4f(x)-4f(-x)=8x^2-4x$

$4f(-x)-9f(x)=12x^2+3x$

$-5f(x)=20x^2+5x \longrightarrow f(x)=-4x^2-\frac{x}{5}$ ۸

$(x+2)f(x)-C_x^2 f(x+2)=3x^2-mx+3m-1$

$x=0 \longrightarrow 2f(0)=0-0+3m-1 \times 5 \Rightarrow 9f(0)=9m-5$

$x=-2 \longrightarrow 9f(0)=14+2m+3m-1=13+5m$

$9m-5=13+5m \quad m=4,5$

$2f(0)=3m-1=12,5 \quad f(0)=6,25$ ۹

$f(x)+f\left(\frac{1}{x}\right)=\frac{3x^2-12x+3}{x}$

$x=-1 \longrightarrow f(-1)+f(-1)=\frac{3+12+3}{-1} \Rightarrow 2f(-1)=-18 \quad f(-1)=-9$ ۱۰