نام و نام خانوادگی: زهرا سادات حسینی ... پاسخنامه تشریحی تکلیف شماره ۵ ... کلاس یازدهم دختر B

$\sqrt{x^3\left(\left(\frac{1}{2}\right)^{x-2+1}-1\right)} = \sqrt{\frac{x^3}{2^{x-1}} - x^3} \to \frac{x^3}{2^{x-1}} - x^3 \geq 0 \to x^3(2^{-x+1}) - x^3 \geq 0$ $\boxed{0=x}$ $x^3(2^{-x+1}-1) \geq 0 \to$ x: 0, 1: $-\ +\ -$ $\to D_f=[0,1]$ $2^{-x+1}=1 \to 1-x=0 \to \boxed{x=1}$	۱
$f(-x)=\sqrt{-x+\|-x+2\|} = \sqrt{-x+\|x-2\|} \to -x+\|x-2\| \geq 0 \to \|x-2\| \geq x$ $\begin{cases} x-2 \geq x \to -2 \geq 0 \ \times \\ x-2 \leq -x \to 2x \leq 2 \to \boxed{x \leq 1} \ \checkmark \end{cases} \Rightarrow D_f=(-\infty,1]$	۲
$\frac{x-1}{f(x)} \geq 0$, $x-1 \to 1$ $f(x) \xrightarrow{\text{با توجه به نمودار}} +3, 2, -4$ $\to$ x: -4, 1, 2, 3: $-\ +\ -\ +\ -$ $\Rightarrow D_f=(-4,1]\cup(2,3)$	۳
$9x^4-7x^2-4x-3=(3x^2-x)(3x^2+x)-6x^2-4x-3$ $(3x^2-x+w)(3x^2+x+z)=9x^4+x^2(3z-1+3w)+x(-z+w)+wz$ $\begin{cases} 3z-1+3w=-7 \\ -z+w=-4 \to w=-4+z \\ wz=-3 \end{cases}$ $\to 3z-1+3(z-4)=-7 \to \boxed{z=1}$ (1) $\to w=1-4 \to \boxed{-3=w}$ (2) $\to (3x^2-x-3)(3x^2+x+1)$, $\Delta>0$, $\Delta<0$ $\to 3x^2-x-3=3x^2+ax+b$ $a=-1$ $b=-3$ $\sqrt{-(a+b)}=\sqrt{4}=\boxed{2}$	۴
$y=\sqrt{x^3+x-\frac{64}{x^3}-\frac{4}{x}} \to \frac{x^6+x^4-64-4x^2}{x^3} \geq 0$, $0 \neq x^3$ $x^2=t \to t^3+t^2-4t-64$ $t^3-64+t(t-4) \to (t-4)(t^2+4t+16)+t(t-4)$ $(t-4)(t^2+5t+16)$, $\Delta<0$ $(4) \to t=x^2=4$, $x=\pm 2$ x: -2, 0, 2: $-\ +\ -\ +$ $\to D_f=[-2,0)\cup[2,+\infty)$	۵

$f(2) = f(1^3+1) = 2-1 = \boxed{1}$

$f(10) = f(2^3+2) = 8-1 = \boxed{7}$ ۶

$\Rightarrow f(2) + f(10) = 1+7 = \boxed{8}$

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

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

$$\rightarrow \frac{g(\sqrt[3]{7}-3)}{f(\sqrt[3]{2}+2)} = \frac{(\sqrt[3]{7}+3-3)^3-27}{(\sqrt[3]{2}+2-2)^3+8}$$ ۷

$$= \frac{7-27}{2+8} = \frac{-20}{10} = \boxed{-2}$$

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

$$\sqrt{[\sqrt{x-4}-2]^2} + \sqrt{(\sqrt{x-4}+2)^2} = |\sqrt{x-4}-2| + |\sqrt{x-4}+2| \xrightarrow{x\geq 4} |\sqrt{x-4}+2|$$ ۸

همیشه مثبت

$$\begin{cases} \sqrt{x-4}+2-\sqrt{x-4}+2 = 4 \ ; \ 8 > x \geq 4 \\ \sqrt{x-4}+2+\sqrt{x-4}-2 = 2\sqrt{x-4} \ ; \ x \geq 8 \end{cases} \Rightarrow \begin{cases} a=0 \\ b=2 \\ c=-4 \end{cases} \Rightarrow \frac{a+b}{c} = \frac{2}{-4} = \boxed{-\frac{1}{2}}$$

$$f(x) = \left\{\left(2, \frac{4}{4-8+3}\right), \left(0, \frac{2}{3}\right)\right\} \rightarrow f(x) = \frac{x+2}{x^2-4x+3} \rightarrow D_f = \mathbb{R}-\{1,3\}$$ ۹

$$\frac{g}{f} = \left\{\left(2, -\frac{1}{4}\right), (0, 6)\right\}$$

الف) $\left\{\left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (2,2), \left(-\frac{1}{2}, 6\right)\right\}$

ب) $\{(1,2), (\sqrt{3},-1), (2,2)\}$ ۱۰

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

د) $\left\{\cancel{\left(-1, \frac{12}{0}\right)}, (3,-1), (1,-4)\right\}$

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