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

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$$\sqrt{x^3\left(\left(\tfrac{1}{2}\right)^{x-2+1}-1\right)}=\sqrt{\frac{x^3}{2^{x-1}}-x^3}\to \frac{x^3}{2^{x-1}}-x^3\geq 0\to x^3(2^{-x+1})-x^3\geq 0$$

$0=x$

$$x^3(2^{-x+1}-1)\geq 0 \longrightarrow \begin{array}{c|ccccc} x & & 0 & & 1 & \\ \hline & - & 0 & + & 0 & - \end{array} \to D_f=[0,1]$$

$$2^{-x+1}=1\to 1-x=0\to \boxed{x=1}$$

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

$$\begin{cases} x-2\geq x\to -2\geq 0 \ \times \\ x-2\leq -x\to 2x\leq 2\to \boxed{x\leq 1} \end{cases}\Longrightarrow D_f=(-\infty,1]$$

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$$\frac{x-1}{f(x)}\geq 0 \longrightarrow \begin{array}{c|ccccccc} x & & -4 & & 1 & & 2 & & 3 \\ \hline & - & & + & & - & & + & & - \end{array} \Rightarrow D_f=(-4,1]\cup(2,3)$$

$f(x) \xrightarrow{\text{با توجه به نمودار}} +3,2,-4$

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$$9x^4-7x^2-4x-3=(3x^2-x)(3x^2+x)-6x^2-4x-3$$

$$(3x^2-x+w)(3x^2+x+z)=9x^4+x^2(3z-1+3w)+x(-z+w)+wz$$

$$\begin{cases} 3z-1+3w=-7 \\ -z+w=-4 \to w=-4+z \\ wz=-3 \end{cases}$$

$$\to 3z-1+3(z-4)=-7\to \boxed{z=1}$$

$$w=1-4\to \boxed{-3=w}$$

$$\to \underset{\Delta>0}{(3x^2-x-3)}\ \underset{\Delta<0}{(3x^2+x+1)}$$

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

$$\sqrt{-(a+b)}=\sqrt{4}=\boxed{2}$$

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$$y=\sqrt{x^3+x-\frac{64}{x^2}-\frac{4}{x}}\to \frac{x^6+x^4-64-4x^2}{x^2}\geq 0$$

$$\begin{cases} x^2=t\to t^3+t^2-4t-64 \\ t^3-64+t(t-4)\to (t-4)(t^2+4t+16)+t(t-4) \\ (t-4)(t^2+5t+16) \end{cases}$$

$t^2+5t+16 \to \Delta<0$

$$t=x^2=4\leftarrow (4)$$

$$x=\pm 2$$

$$\begin{array}{c|ccccccc} x & & -2 & & 0 & & 2 & \\ \hline & - & 0 & + & & - & 0 & + \end{array}$$

$$\to D_f=[-2,0)\cup[2,+\infty)$$

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

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

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

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$$f(x) = (x-2)^3+8$$
$$g(x) = (x+3)^3-27$$

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

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

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

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

همیشه مثبت

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

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

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

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

ب) $\{(1,2), (\sqrt{3},-1), (2,2)\}$

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

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

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

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۱۰ب) $\begin{cases} x^2=1 \rightarrow x=\pm 1 \\ x^2=3 \rightarrow x=\pm 3 \\ x^2=4 \rightarrow x=\pm 2 \\ x^2=-1 \rightarrow \times \end{cases} \rightarrow \{(\pm 1, 2)(\pm\sqrt{3},-1)(\pm 2, 2)\}$