نام و نام خانوادگی ....محمد [illegible].... پاسخنامه تشریحی تکلیف شماره ...۷... کلاس ...دهم (ریاضی)...

۱	دامنهٔ $y=\sqrt{xf(x)}$ ، می‌شود بخش‌هایی که حاصل $xf(x)\geq 0$ باشد. بنابراین: $D_f=[-4,0]\cup[2,4]$	
۲	$x\neq\{-3,0,2,4\} \leftarrow f(x)\neq 0 \leftarrow y=\sqrt{\frac{-x}{f(x)}}$ $\frac{x}{f(x)}<0 \leftarrow \frac{-x}{f(x)}>0 \leftarrow \frac{-x}{f(x)}\geq 0$ $D_f=(-3,2)-\{0\} \longrightarrow \{-2,-1,1\} \longrightarrow$ $\boxed{\text{۳ عدد صحیح}}$	
۳	$f(x)-2f(2)=x^2-3x+4 \longrightarrow f(2)-2f(2)=4-6+4 \longrightarrow f(2)=-2$ $\longrightarrow f(x)+4=x^2-3x+4 \longrightarrow f(x)=x^2-3x=x(x-3)$ $\longrightarrow f(-2)=-2(\underbrace{-2-3}_{-5})=\boxed{+10}$	
۴	$f(f(5))+f(f(1))=? \longrightarrow$ $f(5)=5-\sqrt{5+4}=5-3=2 \longrightarrow f(f(5))=f(2)=2\times2+3=\underline{7}$ $f(1)=2\times1+3=5 \longrightarrow f(f(1))=f(5)=\underline{2}$ $f(f(5))+f(f(1))=7+2=\boxed{9}$	
۵	$f(x-1)-f(x)=6x+2 \qquad f(x)=ax^2-bx+2$ $a(x-1)^2-b(x-1)+\cancel{2}-a(x)^2+bx-\cancel{2}=6x+2$ $a(\overset{x^2+1-2x}{(x-1)^2}-x^2)-b(\underbrace{x-1-x}_{-1})=6x+2$ $a(1-2x)+b=6x+2$ $a-2ax+b=6x+2$ $a+b=2ax+6x+2 \xrightarrow{x=0} a+b=2$ $\overset{2}{a+b}-2ax=6x+2 \longrightarrow -2ax=6x \longrightarrow \underline{a=-3}$ $\longrightarrow -3+b=2 \longrightarrow \underline{b=5}$ $\boxed{a-b=-3-5=-8}$	

۶

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

$$\longrightarrow \boxed{f(\sqrt{3}-2)=\frac{2}{3}}$$

۷

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

$x^2+\frac{1}{x^2}-2$

$$f(-3)=(-3)^2+2=9+2=\boxed{11}$$

۸

$$g(x)=\sqrt{9-x^2}\longrightarrow 9-x^2\geqslant 0\longrightarrow 9\geqslant x^2\longrightarrow 3\geqslant x\geqslant -3 \quad ; \quad f(x)=\{(2,0),(1,-4),(0,2),(7,1)\}$$

$g(2)=\sqrt{9-4}=\sqrt{5}$, $g(1)=\sqrt{9-1}=2\sqrt{2}$, $g(0)=\sqrt{9-0}=3$, $g(7)=$ تعریف نشده

الف) $\frac{f}{g}=\left\{\left(2,\frac{0}{\sqrt{5}}\right)\left(1,\frac{-4}{2\sqrt{2}}\right)\left(0,\frac{2}{3}\right)\right\}\longrightarrow=\boxed{\left\{(2,0),(1,-\sqrt{2}),\left(0,\frac{2}{3}\right)\right\}}$

ب) $\frac{g}{f}=\left\{\left(2,\cancel{\frac{\sqrt{5}}{0}}\right)\left(1,\frac{2\sqrt{2}}{-4}\right)\left(0,\frac{3}{2}\right)\right\}\longrightarrow=\boxed{\left\{\left(1,\frac{-\sqrt{2}}{2}\right)\left(0,\frac{3}{2}\right)\right\}}$

۹

الف) $2f(x)=\boxed{\{(2,2)(3,8)(-5,4)(1,-4)\}}$

ب) $f(x)+1=\boxed{\{(2,2),(3,5),(-5,3),(1,-1)\}}$

ج) $3f^2(x)+1=\{(2,\overset{4}{\cancel{3\times1^2+1}})(3,\overset{49}{\cancel{3\times4^2+1}})(-5,\overset{13}{\cancel{3\times2^2+1}})(1,\overset{13}{\cancel{3\times(-2)^2+1}})\}=\boxed{\{(2,4),(3,49),(-5,13),(1,13)\}}$

د) $f(2x)=\boxed{\{(1,1),(1.5,4),(-2.5,2),(0.5,-2)\}}$

۱۰

$$g(x)=\{(1,0),(2,1),(-1,4),(-2,-3),(3,-1)\} \quad : \quad f(x)=\{(2,3),(7,2),(1,4),(3,1),(5,2)\}$$

الف) $f-g=\{(1,\overset{4}{\cancel{4-0}}),(2,\overset{2}{\cancel{3-1}}),(3,\overset{2}{\cancel{1-(-1)}})\}\longrightarrow\boxed{\{(1,4),(2,2),(3,2)\}}$

ب) $\frac{2f}{g}=\left\{\left(1,\cancel{\frac{8}{0}}\right),\left(2,\frac{6}{1}\right),\left(3,\frac{2}{-1}\right)\right\}\longrightarrow\boxed{\{(2,6),(3,-2)\}}$