نام و نام خانوادگی ...آدرینا منیعی... پاسخنامه تشریحی تکلیف شماره ..۸.. کلاس ....۱۲B....

۱

$f(x)=\sqrt{\log_2 (x-1)}$ $\quad g(x)=\sqrt{-x^2+4x-4}=\sqrt{-(x-2)^2}$ $\quad D_g=\{2\}$

$D_{gof}=\{x\in D_f \mid f(x)\in D_g\}$ $\quad \sqrt{\log_2 (x-1)}=2$

$=\{[2,+\infty) \mid \{17\}\}=\{17\}$ $\quad \log_2 (x-1)=4 \Rightarrow x-1=2^4$

$x-1>0 \to x>1$

$\log_2 (x-1)\geq 0 \Rightarrow x-1\geq 1 \Rightarrow x\geq 2 \} \Rightarrow D_f=[2,+\infty)$ $\quad x=17$

۲

$g\circ f(x)=(2x-5)^2-3(2x-5)+8=4x^2-26x+48$

$f\circ g(x)=2(x^2-3x+8)-5=2x^2-6x+11$

$4x^2-26x+48=2x^2-6x+11$

$2x^2-20x+37=0$

$\alpha^2+\beta^2=(\alpha+\beta)^2-2\alpha\beta=10^2-2(\frac{37}{2})=63$

۳

$g(2x)=5x^2+11 \Rightarrow g(x)=\frac{5x^2}{4}+11 \Rightarrow g(x-7)=\frac{5}{4}(x-7)^2+11$

$\Rightarrow g_{min}{}^{(0)}=11$

۴

$f(x)=3x-4$ $\quad f\circ g(x)=3x^2-6x-1$ $\quad g\circ f(x)=?$

$3g-4=3x^2-6x-1$

$3g=3x^2-6x+3$

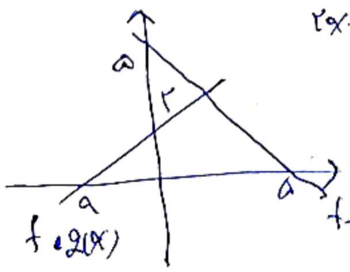
$g=x^2-2x+1$

$g=(x-1)^2$

$g\circ f(x)=(3x-5)^2$

$\boxed{=9x^2-30x+25}$

۵



$2x+4=f(x)=cx+d$ $\quad g(x)=bx+e=3x-1$

$f-g=-x+5=(c-b)x+d-e$

① $c-b=-1$ $\quad d-e=5$ $\quad f\circ g=6x+2$

$\boxed{\frac{2}{a}=6 \Rightarrow a=\frac{1}{3}}$

$2bx+2e=3cx+3d-14$

$2b=3c \Rightarrow \frac{2}{3}b=c$ ② $\xRightarrow{①,②} -\frac{1}{3}b=-1 \Rightarrow b=3$

$d=5+e \Leftarrow d-e=5$ $\quad 2e=3d-14$ $\quad 2e=15+3e-14$ $\quad \Rightarrow c=2$

$-e=1$

$e=-1$

$d=4$

$f(x)=9^x \qquad g(x)=\log_3^x$ ۶

$fog=9^{\log_3^x}=x^{\log_3^9}=x^2$

$gof=\log_3^{9^x}=2x \qquad D_{gof}=\{x\in D_f \mid 9^x>0\}=R$

$fog(x)\leq gof(x)$

$x^2\leq 2x$

$x^2-2x\leq 0 \qquad x\in[0,2] \qquad A=\{0,1,2\}\cap D_{fog} \qquad D_{fog}=\{x\in D_g \mid g(x)\in D_f\}$

$\boxed{\text{۲ عضو صحیح}} \qquad \cap D_{gof}=\{1,2\} \qquad =\{(0,+\infty)\mid R\}=(0,+\infty)$

$f\Big(\underbrace{\frac{x^2-2}{x}}_{x-\frac{2}{x}}\Big)=x^2+x-4-\frac{2}{x}+\frac{4}{x^2}=\underbrace{x-\frac{2}{x}}_{t}+\underbrace{x^2+\frac{4}{x^2}-4}_{t^2}$ ۷

$\Rightarrow \boxed{f(x)=x+x^2}$

$f(x)=\log_2^x \qquad g(x)=8x-x^2 \qquad A=D_{fog} \quad B=R_{fog}$ ۸

$R_{8x-x^2}=(-\infty,16]$

$A=D_{fog}=\{x\in D_g \mid g(x)\in D_f\}=\{R \mid (-\infty,0)\cup(8,+\infty)\}$

$8x-x^2>0$

$x\in(-\infty,0)\cup(8,+\infty)$

$=(-\infty,0)\cup(8,+\infty)$

$fog(x)=\log_2^{8x-x^2} \Rightarrow -\frac{b}{2a}=4 \quad \log_2^{16}$

$=(-\infty,4]$

$B=R_{fog}=(-\infty,4] \qquad A\cap B=(-\infty,0)$

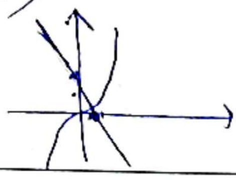
$h(g(x))=f(x) \qquad h(x)=x^3+2x+1 \qquad g(x)=x-1 \qquad fof(x)=1-3f(x)$

$h(g(x))=(x-1)^3+2(x-1)+1 \qquad f(x)=1-3x^2$

$=x^3-3x^2+3x+2x-2+1=x^3-3x^2+5x-1$ ۹

$x^3-\cancel{3x^2}+5x-1=1-\cancel{3x^2} \Rightarrow x^3=-5x+2$

یک نقطه برخورد



$f(x)=x-\frac{4}{x} \qquad gof(x)=ax^3+2x \qquad g(3)=8$

$x-\frac{4}{x}=3 \Rightarrow x^2-3x-4=0 \Rightarrow x=-1$ یا 4

$gof(-1)=g(3)=-a-2=8 \Rightarrow a=-10$ ۱۰

$gof(4)=g(3)=64a+8=8 \Rightarrow a=0$