نام و نام خانوادگی ...حسین گل پسرخزی... پاسخنامه تشریحی تکلیف شماره ...۸... کلاس ...دوازدهم تجربی...

$D_{gof}: \{x \in D_f \mid f(x) \in D_g\} \xrightarrow{①} x \in D_f : D_f \Rightarrow \log_2^{x-1} \geq 0$ $\rightarrow x-1 \geq 1 \rightarrow x \geq 2$ ② $f(x) \in D_g : D_g \Rightarrow \sqrt{-(x-2)^2} \rightarrow -(x-2)^2 \geq 0 \rightarrow (x-2) \leq 0 \rightarrow x-2=0 \rightarrow \boxed{x=2}$ $\rightarrow \sqrt{\log_2^{(x-1)}} = 2 \rightarrow \log_2^{(x-1)} = 4 \rightarrow x-1 = 16 \rightarrow x = 17$ $\cap ①② \rightarrow D_{gof}: \{17\}$	۱
$fog(x) = 2x^2 - 6x + 11$ $gof(x) = (2x-5)^2 - 3(2x-5) + 8 \rightarrow 4x^2 - 20x + 25 - 6x + 15 + 8 \rightarrow 4x^2 - 26x + 48$ $\Rightarrow 2x^2 - 6x + 11 = 4x^2 - 26x + 48 \rightarrow 2x^2 - 20x + 37$ $\alpha^2 + \beta^2 = (\alpha+\beta)^2 - 2\alpha\beta \rightarrow \frac{c}{a} = \frac{37}{\cancel{2}} \rightarrow 100 - 37 = \underline{63}$ $-\frac{b}{a} = \frac{+\cancel{20}}{\cancel{2}} = \boxed{10}$	۲
$f(x) = 2x \,,\, gof(x) = 5x^2 + 11 \Rightarrow g(x) = \frac{5}{4}x^2 + 11$ $g(x-7) = \frac{5}{4}(x-7)^2 + 11 \rightarrow \frac{5}{4}x^2 - \frac{35}{2}x + 60$	۳
$3(g(x)) - 4 = 3x^2 - 6x - 1 \rightarrow g(x) = \frac{3x^2 - 6x + 3}{3} \rightarrow g(x) = x^2 - 2x + 1$ $gof \rightsquigarrow g(x) = (x-1)^2 \rightarrow gof: (3x \underbrace{\cancel{-4}-1}_{-5})^2 \rightarrow 9x^2 - 30x + 25 = gof(x)$	۴
$f-g: -x+5$ $f(x) = \frac{2\overset{mx+h}{g(x)} + 14}{3}$ $g(x) = \frac{3\overset{ax+b}{f(x)} - 14}{4}$ $fog: \frac{2}{\cancel{9}\,6}x + 2$ $\rightarrow f-g = \frac{4(g(x)) + 28 - 9f(x) - 42}{6} \rightarrow f-g = \frac{(4m-9a)}{6}x + (\frac{h+b-14}{6})$ ① $4m - 9a = -6$ ② $h + b = 44$ ③ $2m\left(\frac{3(ax+b) - 14}{4}\right) + 14 + h \rightarrow 3amx + 3bm - 14m + 14 + h$ ④ $am = \frac{2}{6}$ $3bm - 14m + 14 + h = 6 \rightarrow m(3b - 14) + h = -8$	۵

$fog(x) \rightarrow 9^{\log_3^x} \rightarrow x^{\log_3^9} \rightarrow x^2 = fog(x)$ $gof(x) = \log_3^{9^x} \rightarrow \log_3^{3^{2x}} \rightarrow 2x \underbrace{\log_3^3}_{1} \rightarrow gof(x) = 2x$ $x^2 \leqslant x \rightarrow x^2 - x \leqslant 0 \rightarrow x(x-1) \leqslant 0$ $\quad \begin{array}{ccccc} & 0 & & 1 & \\ + & \phi & - & \phi & + \end{array} \rightarrow [0,1]$	۶
$f(x - \frac{2}{x}) = (x - \frac{2}{x})^2 + (x - \frac{2}{x}) \rightarrow f(t) = t^2 + t \rightarrow f(x) = x^2 + x$ t	۷
$D_{fog}: \{x \in D_g \mid g(x) \in D_f\} \xrightarrow{1} x \in D_g \rightarrow D_g: \mathbb{R}$ $\xrightarrow{2} g(x) \in D_f \rightarrow D_f: x > 0 \rightarrow 8x - x^2 > 0 \rightarrow x^2 - 8x < 0$ $\quad \begin{array}{ccccc} & 0 & & 8 & \\ + & \phi & - & \phi & + \end{array}$ $(0,8]$ $1, 2 \cap \rightarrow (0,8] : D_{fog}$, $\underbrace{R_{fog}}_{(0,3]}: 0 < x \leqslant 8 \rightarrow 0 < \log_2^x \leqslant \log_2^8$ $0 < \log_2^x \leqslant 3$ $A \cap B \rightarrow \{1, 2, 3\}$ ۳ عضو صحیح دارد!	۸
$x^3 - 3x^2 + 3x \cancel{-1} + 2x - 2 \cancel{+1} \rightarrow x^3 - 3x^2 + 5x - 2 = h(g(x))$	۹
$\frac{x^2-4}{x} = 3 \rightarrow x^2 - 4 = 3x \rightarrow x^2 - 3x - 4 = 0 \rightarrow (x-4)(x+1) = 0$ $x = -1$, $\boxed{x = 4}$ $gof(4) = 64a + 8 \rightarrow 64a + 8 = 0 \rightarrow \boxed{a = 0}$ ← غ ق ق : چون اگر $a = 0$ باشد $gof = 2x$ می شود در صورتی که هنگامی که $f(x)$ یک تابع غیر خطی است امکان ندارد که gof بگیریم و خطی شود! 8 $gof(-1) = -a - 2 \rightarrow -a - 2 = 8 \rightarrow -a = 10 \rightarrow \boxed{a = -10}$	۱۰