نام و نام خانوادگی ....بستا نیکی معتمد نژاد.... پاسخنامه تشریحی تکلیف شماره ...۸... کلاس ..دوازدهم تجربی A..........

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

زیر رادیکال: $\log_2^{(x-1)} \geq 0 \to x-1 \geq 1 \to x \geq 2$ $\Big\} \to D_f = [2,+\infty)$

D_g زیر رادیکال: $\to -(x-2)^2 \geq 0 \to \boxed{x=2}$

$D_{gof} \Rightarrow D_f \Rightarrow [2,+\infty)\ ,\ f(x) \in D_g \to \sqrt{\log_2^{x-1}} = 2 \to x-1 = 16 \to x = 17$ $\Big\} \xrightarrow{\cap} D_{gof} = \{17\}$

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$fog(x) = 2(x^2-3x+8) - 5 = 2x^2-6x+11$

$gof(x) = (2x-5)^2 - 3(2x-5) + 8 = 4x^2-26x+48$ $\Big\}$ $fog(x) = gof(x)$

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

$2x^2-20x+37=0 \longrightarrow \alpha^2+\beta^2 = (\alpha+\beta)^2 - 2\alpha\beta \longrightarrow \alpha^2+\beta^2 = 63$

$\alpha+\beta = 10 \qquad \alpha\beta = \frac{37}{2}$

۳

$g(f(x)) = 5x^2+11$

$g(2x) = 5x^2+11,\ 2x = t \Big\} \longrightarrow g(t) = \frac{5}{4}t^2+11$

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

$g(x-7) = \frac{5}{4}(x-7)^2+11 \xrightarrow{\text{رأس}} (7,11) \qquad min = 11$

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$fog(x) = f(g(x)) = 3g(x) - 4$

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

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

$g(x) = (x-1)^2$

$gof(x) = g(3x-4) = (3x-4-1)^2$

$gof(x) = 9x^2 - 30x + 25$

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$2(g(x)) = 3f(x) - 14 \longrightarrow g(x) = \frac{3}{2}f(x) - 7$

$f - g = -x+5 \longrightarrow f(x) - \frac{3}{2}f(x) + 7 = -\frac{1}{2}f(x) + 7 = f - g(x)$

$\Rightarrow -\frac{1}{2}f(x) + 7 = -x+5 \qquad f(x) = 2x+4$

$g(x) = \frac{3}{2}(2x+4) - 7 \longrightarrow g(x) = 3x-1$ $\Big\}$ $fog(x) = 0 \longrightarrow 6x+2 = 0 \longrightarrow x = -\frac{1}{3}$

$x = -\frac{1}{3}$

$fog(x) = 9^{\log_3 x} \to x^{\log_3 9} = x^2$ $gof(x) = \log_3 9^x \to \log_3 3^{2x} = 2x$ $fog(x) \leq gof(x)$ $x^2 \leq 2x$ $x^2 - 2x \leq 0$ $\begin{array}{c} 0 \quad\quad 2 \\ \hline + \quad - \quad + \end{array} \to x \in [0,2]$ ۰و۱و۲ ← ۳ تا عدد صحیح	۶
$f\left(\frac{x^2-2}{x}\right) = x^2 + x - 4 - \frac{2}{x} + \frac{4}{x^2}$ $\frac{x^2-2}{2} = \frac{x-2}{2} \xrightarrow{\text{ساده}}$ $\Rightarrow \left(x - \frac{2}{x}\right)^2 + \left(x - \frac{2}{x}\right) = \left(x^2 - 4 + \frac{4}{x^2}\right) + (x) - \frac{2}{x}$ $\left(x - \frac{2}{x}\right)^2 = x^2 - 4 + \frac{4}{x^2}$ $f\left(x - \frac{2}{x}\right) = \left(x - \frac{2}{x}\right)^2 + \left(x - \frac{2}{x}\right)$ $f(x) = x^2 + x$	۷
$fog(x) = \log_2^{-x^2+8x} \longrightarrow D_{fog} = \cancel{D_g}^{R}, g \in D_f = (0,8)$ $R_{fog} = \mathbb{R} \to A \cap B = (0,8)$ $-x^2 + 8x > 0 \quad \begin{array}{c} 0 \quad\quad 8 \\ \hline - \quad + \quad - \end{array} \Rightarrow 1, 2, 3, 4, 5, 6, 7 \longrightarrow$ ۷ عدد صحیح	۸
$fof(x) = 1 - 3f^2(x) \Rightarrow f(f(x)) = 1 - 3f^2(x) \Rightarrow f(x) = 1 - 3x^2$ $h(g(x)) = h(x-1) \to (x-1)^3 + 2(x-1) + 1 \to (x-1)^3 + 2x - 1$ $h(g(x)) = f(x) \to x^3 - 3x^2 + 3x - 1 + 2x - 1 = 1 - 3x^2$ $x^3 + 5x - 3 = 0 \to x^3 - 3 \neq 5x \to$ $\boxed{\text{جواب ندارد}}$	۹
$f(x) = x - \frac{4}{x}$ $gof(x) = ax^3 + 2x$ $g(3) = 8$ $\Rightarrow g\left(x - \frac{4}{x}\right) = ax^3 + 2x$ $g(3) = 8$ $x - \frac{4}{x} = 3 \xrightarrow{\times x} x^2 - 3x - 4 = 0$ $x = -1 \to -a - 2 = 8 \to a = -10$ قابل قبول $x = 4 \to 64a + 8 = 8 \to a = 0$ غیر قابل قبول	۱۰