نام و نام خانوادگی ......[name]...... پاسخنامه تشریحی تکلیف شماره ...۸... کلاس ...[class]... ۹-۷

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$D_{gof}: \{x \in D_f \mid f(x) \in D_g\}$ $f(x) = 2$ $\log_2^{(x-1)} = 4$ $x = 17$ ✓ → درست $D_f: \log_2^{(x-1)} \geq 0$, $x-1 \geq 1$, $x \geq 2$; $x-1 > 0$, $x > 1$ $D_g: -(x^2-6x+6) \geq 0$ $x^2-6x+6 \leq 0$ $(x-2)^2 \leq 0$ $x = \{2\}$ ۲	۱
$f \circ g: 2(x^2-3x+8)-5 = 2x^2-6x+11$ $g \circ f: -2x^2-5x+33$ $2x^2-6x+11 = -2x^2-5x+33$ $4x^2-x-22 = 0$ $2x^2-20x+3$ ✓ $\alpha^2+\beta^2 = S^2-2p$ $S = \frac{-b}{a} = \frac{1}{4}$ $p = \frac{c}{a} = \frac{-11}{2}$ $\rightarrow \frac{1}{16}+11 = \frac{177}{16}$ $\rightarrow S^2-2p = 100-37 = 63$ ۱	۲
$g(f(x)) = 5x^2+11$ $g(2x) = 5x^2+11$ $2x = t$, $x = \frac{t}{2}$; $g(t) = \frac{5t^2}{4}+11$ $g(x-7) = \frac{5(x-7)^2}{4}+11 = \frac{5(x^2-14x+49)}{4}+11$ $x_s = \frac{-b}{2a} = \frac{\frac{5 \times 14}{4}}{\frac{5 \times 1}{4} \times 2} = 7$ $\cancel{f}\, g(7-7) = \frac{5(0)}{6}+11 = 11$ ✓ ۲	۳
$f(x) = 3x-4$ $f(g(x)) = 3x^2-9x-1$ $f(g(x)) = 3(g(x))-4$ $3x^2-9x-1 = 3g-4$ $3x^2-9x+3 = 3g$ $\boxed{g(x) = x^2-3x+1}$ $g(x) = (x-1)^2$ $g \circ f(x) = (3x-5)^2 = 9x^2+25-30x$ $g \circ f(x) = (3x-4)^2-2(3x-4)+1 = -9x^2+15$ ۱/۵	۴
① $f-g(x) = -x+5 \xrightarrow{①}{②}$ $f(x)-1.5f(x)+7 = -x+5$ $2g(x) = 3f(x)-14$ ② $g = 1.5f(x)-7$ $-0.5f(x) = -x-2$ $f(x) = 2x+4$ $g(x) = 3x-1$ $fog(x) = 2(3x-1)+4$ $6x-2+4$ $= 6x+2$ $a \Rightarrow 6x+2 = 0$ $x = \frac{-1}{3}$ ✓ ۲	۵

$f\circ g = 9^{\log_3 x} = x^2 \longrightarrow x > 0$

$g\circ f = \log_3 9^x = 2x \longrightarrow 9^x > 0 \longrightarrow x \in R$

$x^2 \leq 2x \qquad x(x-2) \leq 0 \qquad [0,2] \longrightarrow$ ۶

$x^2 - 2x \leq 0 \qquad x \to 0, 2 \qquad + \mid - \mid +$

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$\dfrac{x^2-2}{x} = x - \dfrac{2}{x}$

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

$f(x - \frac{2}{x}) = (x - \frac{2}{x})^2 + x - \frac{2}{x}$

$f(x) = x^2 + x$

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$D_{f\circ g} : \{x \in D_g \mid g(x) \in D_f\}$

$D_g \in R$

$D_f \longrightarrow x > 0$

$g(x) \in D_f \longrightarrow 8x - x^2 > 0$

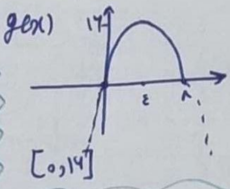
$x^2 - 8x < 0$

$x(x-8) < 0$

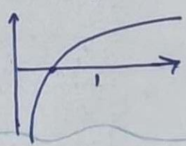
$+ \mid - \mid + \quad (0, 8)$

$R_{f\circ g} : \longrightarrow (-\infty, 4]$

$g(x)$



$f(x) = \log_2 x$



$(0,8) \cap (-\infty, 4]$

$(0, 4] \longrightarrow 1, 2, 3, 4 \longrightarrow$ ۴عدد صحیح

۲ ۸

$f(x) = 3$

$x - \frac{4}{x} = 3$

$x^2 - 3x - 4 = 0 \longrightarrow x = 4$

$(x-4)(x+1) = 0 \longrightarrow x = -1$

$g(f(4)) = 64a + 8 = 8$

$a = 0$

$g(f(-1)) = -a - 2 = 8$

$a = -10$

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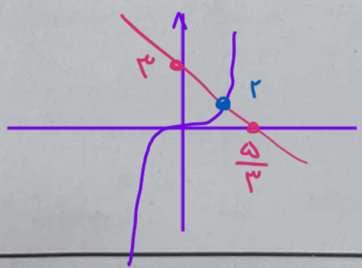
راه‌حل سؤال ۱۰

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

$= x^3 - 3x^2 + 5x - 2 \qquad = -3n^2 + 1$

$f(x) = ? \qquad n^3 = -5n + 3$



$f\circ f(n) = 1 - 3f^2(n)$

$f(n) = 1 - 3n^2$

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راه‌حل سؤال ۹ ۹