نام و نام خانوادگی ...آرین کریمی........... پاسخنامه تشریحی تکلیف شماره .... کلاس ....

$g(x) = \sqrt{-x^2+4x-4} = \sqrt{-(x^2-4x+4)} = \sqrt{-(x-2)^2} \rightarrow x=2$ $f(x) = \sqrt{\log_2^{x-1}} \rightarrow x>1$ $\quad \} f(x)=2$ $\sqrt{\log_2^{x-1}} = 2 \rightarrow \log_2^{x-1} = 4 \rightarrow \boxed{x=17}$	۱
$fog(x) = 2x^2-6x+16-5$ $+11$ $, gof(x) = (2x-5)^2 - 6x + 15 + 8$ $4x^2-20x+25$ $4x^2-26x+48$ $\hookrightarrow 2x^2-6x+11 = 4x^2-26x+48$ $2x^2-20x+37=0 \rightarrow x_1^2+x_2^2 = S^2-2P = 100-37 = 63$ $S=10 \quad P=\frac{37}{2}$	۲
$g(2x) = 5x^2+11 \rightarrow g(x) = \frac{5}{4}x^2+11 \rightarrow g(x-7) = \frac{5}{4}(x^2-14x+49)+11$ $-\frac{b}{2a} = 7 \rightarrow 11$ کمترین مقدار	۳
$fog(x) = 3g-4 = 3x^2-6x-1 \rightarrow 3x^2-6x+3 = 3g \rightarrow g(x) = x^2-2x+1 =$ $\leftarrow (x-1)^2$ $gof(x) = (3x-5)^2 = \boxed{9x^2-30x+25}$	۴
$fog(x) = 6x+2 \Rightarrow \boxed{a=-\frac{1}{3}}$ $(f-g)(x) = -x+5 \rightarrow g(x) = 3x \cancel{-1}$ $2f(x)-3g(x) = 14-f(x) \rightarrow f(x) = 2x+4$	۵

$$f\circ g = 9^{\log_3 x} = x^2 \quad g\circ f = \log_3 9^x = 2x \quad \Big\} \quad x^2 \le 2x \rightarrow x^2 - 2x \le 0 \quad \Big\} \quad x \in [0,2]$$

$$\begin{array}{ccc} 0 & & 2 \\ + & \cancel{-} & + \end{array}$$

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

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

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

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$$f\circ g(x) = \log_2 (8x - x^2) \longrightarrow D_f : 8x - x^2 > 0 \rightarrow D_f \in (0,8) = A$$

$$\longrightarrow R_f : 0 < 8x - x^2 \le 16 \Rightarrow R_f \in (-\infty, 4] = B$$

$$A \cap B \in (0,4] \rightarrow 1, 2, 3, 4 \rightarrow$$ ۴ عضو

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

$$\underbrace{h\circ g(x)}_{f(x)} = (x-1)^3 + 2x - 1 = 1 - \cancel{3x^2} \rightarrow x^3 + 5x - 3 = 0 \rightarrow$$ یک جواب

$$x^3 \cancel{- 3x^2} \cancel{+ 3x} + 2x - 2 \quad (+5x)$$

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$$g(3) = 8 \rightarrow g(\underbrace{f(x)}_{3}) = 8 \rightarrow f(x) = 3 \rightarrow x^2 - 3x - 4 = 0 = (x-4)(x+1) = 0$$

$$x = 4 \quad x = -1$$

$$x = -1 \rightarrow -a - 2 = 8 \rightarrow \boxed{a = -10}$$

$$x = 4 \rightarrow 64a + 8 = 8 \rightarrow \boxed{a = 0}$$

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