نام و نام خانوادگی ..دانیال..محمدی..... پاسخنامه تشریحی تکلیف شماره ..۸.. کلاس ..دوازدهم..پسر..A.....

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$D_{gof} = \{x \in D_f , f(x) \in D_g\}$

$f(x)$: $x-1>0 \to x>1$ $\quad \log_2^{(x-1)} \geq 0 \to x-1 \geq 1 \to x \geq 2$ $\quad D_f = [2,+\infty)$

$g(x)$: $-x^2+4x-4 \geq 0 \to x^2-4x+4 \leq 0 \to (x-2)^2 \leq 0 \to x=2$ $\quad D_g = \{2\}$

$D_{gof} = \{x \in [2,+\infty) , \sqrt{\log_2^{(x-1)}} = 2\} = \boxed{\{17\}}$

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$fog(x) = f(g(x)) = f(x^2-3x+1) = 2x^2-6x+11$

$gof(x) = g(f(x)) = g(2x-5) = (2x-5)^2-3(2x-5)+1 = 4x^2-26x+41$

$fog(x) = gof(x) \to 2x^2-6x+11 = 4x^2-26x+41 \to 2x^2-20x+37=0$

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

۳

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

$g(x) = \frac{5}{4}t^2+11 \to g(t+1) = \frac{5}{4}(t+1)^2+11$

$x-1=t \to x=t+1$

$\boxed{y_0 = 11}$ کمترین مقدار تابع $\leftarrow y_0$ $\leftarrow$ اشتقال طولی تابع در آن صفر است.

۴

$f(g(x)) = 3g-4 = 3x^2-6x-1 \to g = x^2-2x+1$

$gof(x) = g(3x-4) = (3x-4)^2-2(3x-4)+1 = \boxed{9x^2-30x+25}$

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$g(x) = \frac{3}{2}f(x)-1$

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

$f(x) = 2x+4$

$g(x) = \frac{3}{2}(2x+4)-1 = 3x-1$

$fog(x) = f(g(x)) = 2(3x-1)+4 = 6x+2 = 0 \to \boxed{x = -\frac{1}{3} = a}$

$gof(x) = \log_3^{9^x} = 2x$ $\quad D_{gof} = \{x \in D_f , f(x) \in D_g\} = \mathbb{R}$

$fog(x) = 9^{\log_3^x} = 3^{\log_3^{x^2}}$ $\quad D_{fog} = \{x \in D_g , g(x) \in D_f\} = (0, +\infty)$

$fog(x) \le gof(x) \rightarrow 3^{\log_3^{x^2}} \le 2x \rightarrow \log_3^{x^2} \le \log_3^{2x} \rightarrow x^2 \le 2x \rightarrow x(x-2) \le 0$

	0		2	
	$+$	$-$	$+$	

$x \in [0, 2]$

اعضای صحیح $\{0, 1, 2\}$ ← ۳ عضو

۶

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

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

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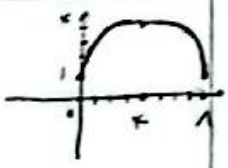
$fog(x) = \log_2^{8x - x^2}$ $\quad D_{fog} = \{x \in D_g , g(x) \in D_f\} = [0, 8] = A$

$D_g = \mathbb{R}$ $\quad R_{fog} = [0, 4] = B$

$D_f = (0, +\infty)$ $\quad A \cap B = [0, 4]$



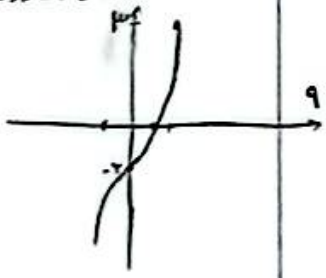
۸

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

$h(g(x)) = (x-1)^3 + 2(x-1) + 1 = x^3 - 3x^2 + 5x - 2 = 1 - 3x^2 \rightarrow x^3 + 5x - 3 = 0$

یک برخورد با محور x ← یک ریشه

x	-3	-2	-1	0	1	2	3
y	-45	-21	-9	-3	3	14	39



۹

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

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

$g(2) = 8$

$\frac{x^2-4}{x} = 3 \rightarrow x^2 - 3x - 4 = 0 \rightarrow (x-4)(x+1) = 0 \rightarrow$

$x = -1 \rightarrow g(2) = -a - 2 = 8 \rightarrow a = -10$

$x = 4 \rightarrow g(2) = 64a + 8 = 8 \rightarrow a = 0$

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