نام و نام خانوادگی ......[illegible]...... پاسخنامه تشریحی تکلیف شماره ..۵.. کلاس ..یازدهم.. ۸

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$D_{gof(x)} \Rightarrow \{x \in D_f : f(x) \in D_g\} \Rightarrow D_f \Rightarrow \sqrt{\log_2^{x-1}} \to x-1>0,\ x>1$

$\to \log_2^{x-1} \geq 0 \to x-1 \geq 1 \to x \geq 2$ $\qquad D_{gof(x)} = \{17\}$

$D_g \Rightarrow \sqrt{-(x-2)^2} \Rightarrow D_g = 2$ $\qquad f(x) \in D_g \Rightarrow \sqrt{\log_2^{x-1}} = 2 \to \log_2^{x-1} = 4 \to x-1 = 16 \to x = 17$

۲

$fog(x) = gof(x) \Rightarrow 2x^2 - 6x + 16 - 5 = 4x^2 - 20x + 25 - 6x + 15 + 8$

$\boxed{\begin{array}{l} g(x) = x^2 - 3x + 8 \\ f(x) = 2x - 5 \end{array}}$

$\Rightarrow 2x^2 - 6x + 11 = 4x^2 - 26x + 48 \Rightarrow 2x^2 - 20x + 37 = 0$

$a^2 + b^2 = S^2 + 2P = \left(\frac{-b}{a}\right)^2 + 2\frac{c}{a} = \left(\frac{20}{2}\right)^2 + 37 = 137$

۳

$gof(x) = 5x^2 + 11$, $f(x) = 2x$ $\Rightarrow g(2x) = 5x^2 + 11 \Rightarrow g(x) = 5\left(\frac{x}{2}\right)^2 + 11 = \frac{5x^2}{4} + 11$

$\Rightarrow g(x-7) = \frac{5(x-7)^2}{4} + 11 = \ldots \Rightarrow$ کمترین مقدار: ۱۱

عبارت مثبت

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$f(x) = 3x - 4$

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

$\Rightarrow g(x) = (x-1)^2$ $\qquad gof(x) = ((3x-4)-1)^2 = (3x-5)^2 =$

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

۵

$f - g(x) = ax + b \Rightarrow a(0) + b = 5 \Rightarrow b = 5$

$(0,5)$, $(5,0)$ $\Rightarrow 5a + 5 = 0 \to 5a = -5 \Rightarrow a = -1$ $\Big\} \Rightarrow f - g = -x + 5$

$f(x) = 9^x \; ; \; g(x) = \log_3 x$

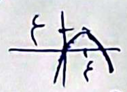
$f\circ g(x) \le g\circ f(x) \Rightarrow 9^{\log_3 x} \le \log_3 9 \Rightarrow x^{\log_3 9} \le 2 \Rightarrow x^2 \le 2$ ۶

$\Rightarrow -\sqrt{2} \le x \le \sqrt{2} \Rightarrow \{-1, 0, 1\} \rightarrow$ اعداد صحیح

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

$\Rightarrow f\left(x - \frac{2}{x}\right) = \left(x - \frac{2}{x}\right)^2 + \left(x - \frac{2}{x}\right) \Rightarrow f(x) = x^2 - x$ ۷

$\left.\begin{array}{l} f(x) = \log_2 x \\ g(x) = 8x - x^2 \end{array}\right\} f\circ g(x) = \log_2^{8x - x^2} \rightarrow 8x - x^2 \ge 0 \rightarrow$ $\begin{array}{ccccc} & 0 & & 8 & \\ - & | & + & | & - \end{array}$



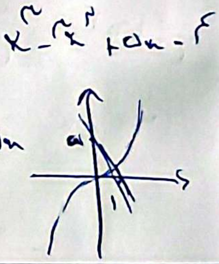
$8x - x^2 \Rightarrow \frac{-b}{2a} = \frac{-8}{-2} = 4 \Rightarrow 8(4) - (4)^2 = 16 \Rightarrow \log_2 16 = 4$ ۸

$\left.\begin{array}{l} \rightarrow R_f = (-\infty, +4] \\ D_f = [0, 8] \end{array}\right. \Rightarrow R_f \cap D_f = A \cap B = [0, 4] \rightarrow$ ۵ عضو صحیح

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

$h\circ g(x) = (x-1)^3 + 2(x-1) + 1 = x^3 - 3x^2 + 3x - 3 + 2x - 2 + 1 = x^3 - 3x^2 + 5x - 4$ ۹

$\Rightarrow x^3 - \cancel{3x^2} + 5x - 4 = 1 - \cancel{3x^2} \Rightarrow x^3 + 5x - 5 = 0 \Rightarrow x^3 = 5 - 5x$



یک برخورد

$\left.\begin{array}{l} f(x) = x - \frac{4}{x} \\ g\circ f(x) = ax^3 + 2x \end{array}\right\} \Rightarrow g\left(x - \frac{4}{x}\right) = ax^3 + 2x$

$\boxed{\begin{array}{l} a = 10 \\ a = 0 \end{array}}$

$g\left(x - \frac{4}{x}\right) = ax^3 + 2x$ ۱۰

$g(3) = 8$

$\rightarrow x - \frac{4}{x} = 3 \rightarrow x^2 - 3x - 4 = 0$

$\rightarrow (x-4)(x+1) = 0 \rightarrow x = -1 \rightarrow -a - 2 = 8 \Rightarrow -a = 10 \rightarrow -a = -10$

$\searrow x = 4 \rightarrow 64a + 8 = 8 \rightarrow a = 0$