

$$f(x) \rightarrow \log_2^{(x-1)} \geq 0 \rightarrow x-1 \geq 1 \rightarrow \underline{x \geq 2} \quad (1) \quad x-1 \geq 0 \rightarrow \underline{x \geq 1} \quad (2)$$

$$g(x) \rightarrow -(x'-2)^2 \geq 0 \rightarrow x'=2 \rightarrow \sqrt{\log_2^{x-1}} = 2 \rightarrow \log_2^{x-1} = 4 \rightarrow x-1 = 16 \rightarrow x = 17 \quad (3)$$

$$\rightarrow \textcircled{1} \cap \textcircled{2} \cap \textcircled{3} \Rightarrow D_{g \circ f} = \{17\}$$

$$f \circ g(x) = 2(x^2 - 2x + 1) - 5 = 2x^2 - 4x + 11$$

$$g \circ f(x) = (2x - 5)^2 - 3(2x - 5) + 11 = 4x^2 - 20x + 25 - 6x + 15 + 11 = 4x^2 - 26x + 51$$

$$\rightarrow 2x^2 - 4x + 11 = 4x^2 - 26x + 51 \rightarrow 2x^2 - 22x + 40 = 0 \rightarrow x^2 - 11x + 20 = 0 \rightarrow x = 5, 4$$

$$g \circ f(x) = g(f(x)) = g(2x) = 5x^2 + 11 \rightarrow g(x) = \frac{5}{2}x^2 + 11 \rightarrow g(x-1) \text{ با } g(x) \text{ کمترین مقدار قدری ندارد}$$

$$\rightarrow g(x)_{\min} \rightarrow \text{cut} = \frac{b}{2a} = 0 \rightarrow g(0) = 11 \rightarrow g(x-1)_{\min} = \begin{vmatrix} 11 \\ 11 \end{vmatrix}$$

$$f(g(x)) = \dots \rightarrow f(g(x)) = y \rightarrow f(x) = 2x - 5 \rightarrow f(y) = 2y - 5 = 2x^2 - 4x - 1$$

$$\rightarrow 2y = 2x^2 - 4x + 3 \rightarrow y = g(x) = x^2 - 2x + 1 = (x-1)^2$$

$$\rightarrow g \circ f(x) = (2x - 5)^2 - 3(2x - 5) + 11$$

$$f - g = 5 - x, \quad 3f - 2g = 12 \rightarrow \begin{matrix} 3f - 2g = 12 \\ -2f + 2g = 2x - 10 \end{matrix}$$

$$f = 2x + 5 \rightarrow 2x + 5 - g = 5 - x \rightarrow g = 2x - 1$$

$$\rightarrow f \circ g = 2(2x - 1) + 5 = 4x - 2 + 5 = 4x + 3 \rightarrow 4x + 3 = 0 \rightarrow x = -\frac{3}{4} = a$$

$$g \circ f = \log_9^9 = \log_9^9 = 9$$

$$f \circ g = 9^{\log_9^9} = 9^9 = 9^9$$

$$\Rightarrow 9^9 \geq 9^9 \rightarrow 9^9 - 9^9 \leq 0 \rightarrow 9(9-9) \leq 0$$

$$\frac{0}{1-1} = \frac{0}{0}$$

$$9 \in [0, 9]$$

$$9 = \{0, 9, 9\}$$

$$9 \in [0, 9]$$

$$f\left(9 - \frac{9}{9}\right) = 9^9 - 9 + \frac{9}{9} + 9 - \frac{9}{9} = \left(9 - \frac{9}{9}\right)^9 + 9 - \frac{9}{9} \Rightarrow f(9) = 9^9 + 9$$

$$f \circ g \rightarrow \log_9^9 \rightarrow D_{f \circ g} \rightarrow 9^9 - 9^9 > 0 \rightarrow 9^9 - 9^9 < 0 \rightarrow \frac{0}{1-1} = \frac{0}{0}$$

$$\rightarrow D_f = (0, 9) \rightarrow \log_9^9 \rightarrow f \circ g(9_{\max}) = \max \rightarrow D_{\min} = \frac{0}{1-1} \rightarrow R_{\min} = -\infty$$

$$D_{\max} = g(9) = 9 \rightarrow R_{\max} = \log_9^9 = 9 \rightarrow R = (-\infty, 9] \rightarrow A \cap B = \{1, 9, 9, 9\} \rightarrow \text{مجموع}$$

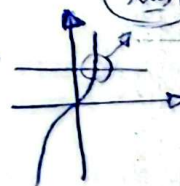
$$f(f(9)) = 1 - 9^9 \rightarrow f(f(9)) = 1 \rightarrow f(1) = 1 - 9^9 \rightarrow f(9) = 1 - 9^9$$

$$h(g(9)) = (9-1)^9 + 9(9-1) + 1 = 9^9 - 9^9 + 9^9 + 9^9 + 9^9 = 9^9 - 9^9 + 9^9 + 9^9 + 9^9$$

$$\rightarrow 9^9 - 9^9 + 9^9 = 1 + 9^9 \rightarrow 9^9 + 9^9 + 9^9 = 0 \rightarrow 9^9 + 9^9 + 9^9 = 0$$

$$9^9 + 9^9 + 9^9 = 0$$

$$9^9 + 9^9 + 9^9 = 0$$



$$f(9) = 9 - \frac{9}{9} = 9 - 1 = 8 \rightarrow f(9) = 8 \rightarrow 9 - \frac{9}{9} = 8 \rightarrow 9^9 - 9^9 - 9 = 0 \rightarrow 9 = -1, 9 = 9$$

$$g \circ f(-1) = -9 - 9 = -18 \rightarrow a = -18$$

$$a = -18$$

$$g \circ f(9) = 9^9 + 9 = 9 \rightarrow a = 0$$