

$$g(n) = \sqrt{-n^2 + 8n - 8} \quad f(n) = \sqrt{\log_r(n-1)} \quad D_{g \circ f}(n)$$

$n=17$

$n-1=16$

$n=17$

$$f(n) = 2n - 8 \quad g(n) = n^2 - 9n + 11 \quad f \circ g(n) = g \circ f(n)$$

$$f \circ g = 2(n^2 - 9n + 11) - 8 = 2n^2 - 18n + 22 - 8 = 2n^2 - 18n + 14$$

$$g \circ f = (2n - 8)^2 - 9(2n - 8) + 11 = 4n^2 - 32n + 64 - 18n + 72 + 11 = 4n^2 - 50n + 147$$

$$2n^2 - 18n + 14 = 4n^2 - 50n + 147 \rightarrow 2n^2 - 32n + 133 = 0$$

$$a^2 + b^2 = 5^2 - 2P = 25 - 2(100) = 175 = 0^2$$

$$g \circ f(n) = 2n^2 + 11 \quad f(n) = 2n \quad \min g(n-1)$$

$$g(n) = 2n^2 + 11 \rightarrow t = \frac{n}{2} \rightarrow g \circ f = 2\left(\frac{n}{2}\right)^2 + 11 \rightarrow \frac{d}{dn} 2n^2 + 11$$

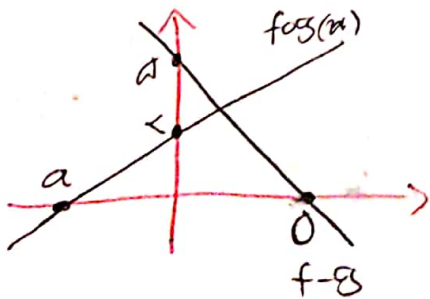
$$-\frac{b}{2a} = -\frac{0}{2} = 0 \rightarrow g(0) = 11 = \min$$

$$f(n) = 2n - 8 \quad f \circ g(n) = 2n^2 - 9n - 1 \quad g \circ f(n) = ?$$

$$2g - 8 = 2n^2 - 9n - 1 \rightarrow g = \frac{2n^2 - 9n + 7}{2} = g(n) = n^2 - 4.5n + 3.5 = (n-1)^2$$

$$g \circ f(n) = (2n - 8 - 1)^2 = (2n - 9)^2 = 4n^2 - 36n + 81$$

$$f \circ g \quad f - g \quad 2g(n) = 2f(n) - 18$$



برای جابجایی

$$f(n) = 9^n \quad g(n) = \log_9 n \quad f \circ g(n) \leq g \circ f(n) \quad \text{for } n \geq 1 \quad (8)$$

$$f \circ g(n) = 9^{\log_9 n} = n^{\log_9 9} = n^1 \quad g \circ f(n) = \log_9 9^n = n \quad n \in \mathbb{R}$$

$$n^1 \leq n \rightarrow n^1 - n \leq 0 \rightarrow n(n-1) \leq 0 \rightarrow \begin{matrix} + & - & + \\ | & | & | \\ 0 & 1 & \end{matrix} \quad n \in [0, 1] \quad (9)$$

$$[0, 1] \rightarrow [0, 1]$$

$$\{1, 1\}$$

$$f\left(\frac{n-1}{n}\right) = n^{\frac{n-1}{n}} + n - 1 - \frac{1}{n} + \frac{1}{n^2} \quad f(n) = ? \quad (10)$$

$$f\left(n - \frac{1}{n}\right) = n^{\frac{n-1}{n}} + \frac{1}{n^2} - 1 + n - \frac{1}{n} \quad f\left(n - \frac{1}{n}\right) = \left(n - \frac{1}{n}\right)^{\frac{n-1}{n}} + \left(n - \frac{1}{n}\right) \rightarrow f(n) = n^{\frac{n-1}{n}} + n$$

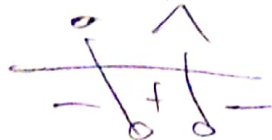
$$\left(n - \frac{1}{n}\right)^{\frac{n-1}{n}} = n^{\frac{n-1}{n}} + \frac{1}{n^2} - 1$$

$$f(n) = n^{\frac{n-1}{n}} + n$$

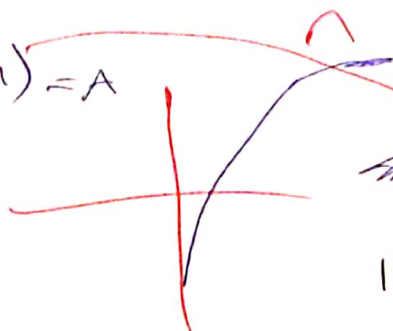
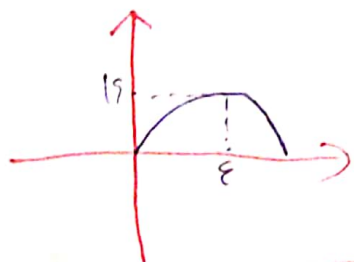
$$f(n) = \log_9 n \quad g(n) = \Lambda n - n^2 \quad n(1-n)$$

$$Df \circ g, Rf \circ g \quad \downarrow A \quad \downarrow B$$

$$A \cap B = ? \quad \text{مماس}$$



$$Df \circ g = (\log 1) = A$$



$$(-\infty, \frac{1}{2}] = B$$

$$[0, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}]$$

$$[0, \frac{1}{2}]$$

$$f \circ f(n) = 1 - f^2(n) \quad g(n) = n - 1 \quad h(n) = n^2 + 5n + 1 \quad (11)$$

$$(n-1)^2 + 5(n-1) + 1 = f(n) = 1 - n^2$$

$$h(g(n)) = f(n) \quad \text{مماس}$$

$$n^2 + 5n + 1 = 1 - n^2 \rightarrow n^2 + 5n + 1 = 1 - n^2 \rightarrow 2n^2 + 5n = 0 \rightarrow n(2n + 5) = 0 \rightarrow n = 0 \text{ or } n = -\frac{5}{2}$$

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$$a = ? \quad g(n) = \Lambda \quad g \circ f(n) = an^2 + 5n \quad f(n) = n - \frac{1}{n} \quad (12)$$

$$f(n) = n - \frac{1}{n} = 0 \rightarrow n^2 - 1 = (n-1)(n+1) \rightarrow (n-1)(n+1) = 0 \rightarrow n = 1 \text{ or } n = -1$$

$$n = 1$$

$$9a + 5 = 1$$

$$a = 0$$

$$n = -1$$

$$-a + 5 = 1$$

$$a = -4$$

$$\{0, -4\}$$