

19,2

$$D_{g \circ f} = \{n \in D_f \mid f(n) \in D_g\}$$

$$y = \sqrt{\log_r^{(n-1)}} \rightarrow n-1 > 0 \rightarrow \textcircled{I}, \log_r^{n-1} \geq 0 \rightarrow n-1 \geq 1 \rightarrow \textcircled{II}$$

$$I \cap II \rightarrow n \in [2, +\infty) / y(n) = \sqrt{-n^2 + 2n - 1} = \sqrt{-(n-1)^2} \rightarrow n-1=0$$

$$\boxed{n=1} \rightarrow \sqrt{\log_r^{(n-1)}} = 1 \quad \log_r^{(n-1)} \leq 0 \rightarrow n-1=1 \rightarrow \textcircled{III}$$

$$\log(n) = g \circ f(n) \rightarrow g(f(n)) = \frac{1}{2} (n^2 - 2n + 1) - 1 = \frac{1}{2} (n-1)^2 - 1$$

$$n^2 - 2n + 1 - 2 = n^2 - 2n - 1 = n^2 - 2n + 1 - 2 = n^2 - 2n - 1$$

$$n^2 - 2n + 1 \leq n^2 - 2n - 1 \rightarrow n^2 - 2n + 2 \leq 0$$

$$\rightarrow \alpha^2 + \beta^2 \leq (\alpha^2 + \beta^2)^2 - 4\alpha\beta \rightarrow \left(\frac{1}{2}\right)^2 - \left(\frac{1}{2} \cdot 2\right)$$

$$= 1 - 2 = -1 \rightarrow \textcircled{IV} \checkmark$$

$$g \circ f(n) = g(f(n)) = \frac{1}{2} n^2 + 1 \rightarrow t = f(n) \rightarrow g(f(n)) = \frac{1}{2} \left(\frac{1}{2}\right)^2 + 1$$

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

$$\rightarrow (n-1)^2 \geq 0 \rightarrow \textcircled{V} \rightarrow g(n-1) = 1 \checkmark$$

Handwritten note in margin

$$n^2 - 2n - 1 + 2 \rightarrow n^2 - 2n + 1 \rightarrow \frac{n^2 - 2n + 1}{1}$$

$$\rightarrow (n^2 - 2n + 1) \rightarrow g(n) = n^2 - 2n + 1$$

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

$$\rightarrow \boxed{n^2 - 2n} \checkmark$$

divide by

$$\begin{cases} r f(n) - r g(n) = 12 \\ f(n) - g(n) = \omega - n \end{cases} \rightarrow \begin{cases} g(n) = \omega - 1 \\ f(n) = \omega + 1 \end{cases} \rightarrow$$

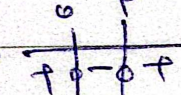
$$\downarrow$$
$$r g(n) - r f(n) = \omega - 12$$

$$\log(n) = r(\omega - 1) + 12 = 9n + 1$$

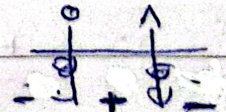
✓

$$9n + 1 = \frac{-r}{a}n + r \rightarrow 9n = \frac{-r}{a}n \rightarrow \frac{-r}{a} = 9$$

$$a = \frac{1}{9}$$

$\log_a x \log_a m \rightarrow q(\log_a m) \nmid \log_a qm$
 $m \log_a q \nmid m \log_a q \rightarrow m^2 \nmid m^2 \rightarrow m^2 - m^2 \leq 0$ 1,5
 $m(m-1) \leq 0 \rightarrow$  $[0, 1] \rightarrow$ ~~residue~~
 $m \in [0, 1] \rightarrow (0, 1) \rightarrow$ residue
← residue

$t = \frac{m^2 - 1}{m} = m - \frac{1}{m}$
 $f(t) = m^2 + m - \frac{1}{m} + \frac{1}{m^2}$
 $t^2 = (m - \frac{1}{m})^2 = m^2 + \frac{1}{m^2} - 2$
 $t^2 + m - \frac{1}{m} = m^2 + m - 2 + \frac{1}{m^2} + \frac{1}{m} = \frac{1}{m^2} + \frac{1}{m} + m - 2$
 $f(t) = t^2 + m - \frac{1}{m} \rightarrow$ Lassutan ✓

$\mathcal{D}_{f \circ g} \subseteq \{n \in \mathcal{D}_g \mid g(n) \in \mathcal{D}_f\}$
 $\log_2 \leq \log_2 (1 - m^2)$
 $1 - m^2 > 0$
 $m \in (0, 1)$
 $\mathcal{D}_{f \circ g} \rightarrow$ 
HAMKELASI

برای تابع $f(x)$ داریم $f(x) \in [0, 1]$ و $f(x) \leq 1$

برای $n \in \mathbb{N}$ داریم $f(n) \in [0, 1]$ و $f(n) \leq 1$

$$B = \log_{1/2}([0, 1]) = (-\infty, 0] \rightarrow A \cap B \rightarrow (-\infty, 0]$$

که مقدار x در $(0, 1]$ باشد $x \in (-\infty, 0]$ صحیح

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

$$h(x) = f(x) \rightarrow (n-1)^2 + 1(n-1) + 1 = 1 - cn^2$$

$$n^2 - cn^2 + cn + (n-1) + 1 = 1 - cn^2$$

$$n^2 + cn - c = 0 \rightarrow n^2 + cn = 0$$

صاف
که با n و c مقبوض
✓

S

give is right

$$f(n) \leq c \rightarrow n - \frac{\epsilon}{n} \leq c \rightarrow n^2 - \epsilon n \leq c \rightarrow -b$$

$$(n - \epsilon)(n + 1) \leq c \rightarrow n \leq \epsilon, n \leq -1$$

$$gof(\epsilon) \leq 1 \rightarrow g^{\epsilon} a - \epsilon \leq 1 \rightarrow g^{\epsilon} a \leq 1 + \epsilon \rightarrow a \leq 1 + \epsilon \checkmark$$

$$gof(b) \leq 1 \rightarrow -a - \epsilon \leq 1 \rightarrow a \leq 1 - \epsilon \checkmark$$