

10/12

11/8

1  $g \circ f(n)$   $D_{g \circ f} = \{n \in D_f \mid f(n) \in D_g\}$  (1)

1.0

2  $f(n) = \sqrt{\log_r^{n-1}}$

3  $D_{g \circ f} = \{n \in [r, +\infty) \mid f(n) \in \{r\}\}$

4  $g(n) = \sqrt{-n^2 + 4n - 2}$

5  $D_f = \begin{cases} n-1 > 0 \Rightarrow n > 1 \\ \log_r^{n-1} \geq 0 \Rightarrow n-1 \geq 1 \Rightarrow n \geq r \end{cases} \Rightarrow D_f = [r, +\infty)$

6  $\Rightarrow D_f = [r, +\infty)$

7  $\Rightarrow -(n^2 - 4n + 2) \geq 0 \Rightarrow -(n-2)^2 \geq 0 \Rightarrow \frac{r}{1} \Rightarrow D_g = \{r\}$

8  $D_{g \circ f} = \{r\}$

9  $f(n) \in D_g \rightarrow \sqrt{\log_r^{n-1}} = r \rightarrow \log_r^{n-1} = r^2 \rightarrow n-1 = r^2 \rightarrow n = r^2 + 1$

10  $f(n) = rn - a$

11  $\rightarrow \log \rightarrow r(n^2 - 4n + 1) - a \Rightarrow$  (2)

12  $g(n) = n^2 - 4n + 1$

13  $r n^2 - 4n + 1$

14  $g \circ f \rightarrow (rn - a)^2 - r(rn - a) + 1 \Rightarrow rn^2 + ra - r \cdot n - 4n + 1$

15  $rn^2 - 4n + 1$

16  $\log = g \circ f \Rightarrow rn^2 - 4n + 1 = rn^2 - 4n + 1 \Rightarrow rn^2 - 4n + 1$

17  $Ar + Br \rightarrow S^r - TP \Rightarrow \left(\frac{-b}{a}\right)^r - r\left(\frac{c}{a}\right) \Rightarrow \left(\frac{r}{r}\right)^r - r\left(\frac{r}{r}\right) =$

18  $100 - 3V = 4V$



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$$g \circ f_{(n)} = \omega n^r + 11 \quad f(n) = \gamma n \quad (K)$$

$$g(\gamma n) = \omega n^r + 11 \Rightarrow \gamma n = t \Rightarrow \frac{t}{\gamma} = n \Rightarrow g(t) = \omega \left(\frac{t}{\gamma}\right)^r + 11$$

$$\Rightarrow g(t) = \frac{\omega t^r}{\gamma^r} + 11 \xrightarrow{t=n} g(n) = \frac{\omega n^r}{\gamma^r} + 11 \Rightarrow g(n - \gamma) = ?$$

$$g(n - \gamma) = \frac{\omega (n - \gamma)^r}{\gamma^r} + 11 \Rightarrow \frac{\omega n^r + 2\epsilon \omega - \gamma \omega n}{\gamma^r} + 11 \Rightarrow$$

$$g(n - \gamma) = \frac{\omega n^r - \gamma \omega n + 2\epsilon \omega + \epsilon \epsilon}{\gamma^r} \rightarrow \frac{-b}{\gamma^r} = \frac{\gamma \omega}{1} = \gamma$$

$$\omega \times \epsilon \gamma - \gamma \omega \gamma + 2\epsilon \omega = 2\epsilon \omega + 2\epsilon \omega - \epsilon \gamma \omega = \epsilon \epsilon \div \epsilon = 11 \text{ (مقدار)}$$

$$f(n) = \gamma n - \epsilon \rightarrow \gamma g - \epsilon = \gamma n^r - \gamma n - 1 \Rightarrow (K)$$

$$g \circ f = \gamma n^r - \gamma n - 1 \quad \frac{\gamma n^r - \gamma n - 1 + \epsilon}{\gamma^r} \Rightarrow \frac{\gamma n^r - \gamma n + \gamma}{\gamma^r} = \frac{n^r - n + 1}{\gamma}$$

$$g(n) = n^r - \gamma n + 1$$

$$g \circ f \rightarrow (\gamma n - \epsilon)^r - \gamma (\gamma n - \epsilon) + 1 \Rightarrow \gamma n^r + 1\gamma - 2\epsilon n - \gamma n + 1 + 1 \Rightarrow$$

$$\gamma n^r - \gamma \omega n + 2\omega = (\gamma n - \omega)^r = g \circ f_{(n)}$$



$$f(g(n)) = f(n) - 12$$

$$f(n) = f(g(n)) + 12 \Rightarrow f(n) = \frac{f(g(n)) + 12}{r} \rightarrow$$

$$f - g \Rightarrow \frac{f(g(n)) + 12}{r} - g(n) \Rightarrow f(g(n)) + 12 - r g(n) = 7$$

$$-g(n) + 12 = -n + 2 \Rightarrow -g(n) = -n - 9 \Rightarrow g(n) = \frac{n+9}{r}$$

$$f - g \Rightarrow (0, 2) \quad a n + 2 \Rightarrow 2a + 2 = 0 \Rightarrow a = -1 \Rightarrow$$

$$f(n) = \frac{f(g(n)) + 12}{r} \quad f(n) = r n + 2 \quad -n + 2$$

$$f(n) - g(n) = -n + 2 \rightarrow g(n) = r n - 1 \rightarrow f(g(n)) = 4n + 2$$

$$f(n) = \frac{f(g(n)) + 12}{r} \Rightarrow \frac{f(\frac{n+9}{r}) + 12}{r} \Rightarrow \frac{f}{r} n + r + \frac{12}{r} \Rightarrow$$

$$f(n) = \frac{f}{r} n + \frac{r}{r} \rightarrow f \circ g \rightarrow \frac{f}{r} (\frac{n+9}{r}) + \frac{r}{r} \Rightarrow \frac{r n + 12}{r^2} + \frac{r}{r}$$

$$-\frac{f}{r} n + r = 4n + 2 \rightarrow a = -\frac{1}{r}$$

$$\frac{r n + 12 + 12}{r^2} = \frac{r n + 12}{r^2} = 0 \Rightarrow r n = -12 \Rightarrow n = -9$$

$$f(n) = 9^n$$

$$f \circ g(n) \leq g \circ f(n) \quad n > 0$$

$$g(n) = \log_p^n$$

$$f \circ g = 9^{\log_p^n} \Rightarrow n^{\log_p 9} \Rightarrow n^2$$

$$g \circ f \Rightarrow \log_p^{9^n} \Rightarrow n \log_p 9 \Rightarrow 2n$$

$$n^2 \leq 2n \Rightarrow n \leq 2$$

$$+ \frac{r}{r} - \frac{r}{r} +$$

$$\rightarrow 1, 2 \rightarrow \underline{2}$$





$$f\left(\frac{n^r - r}{n}\right) = n^r + n - \varepsilon - \frac{r}{n} + \frac{\varepsilon}{nr} \quad (V)$$

$$n - \frac{r}{n} = t \rightarrow n^r + \frac{\varepsilon}{nr} - \varepsilon = t^r + t$$

$$f(t) = t^r + t \Rightarrow f(n) = n^r + n \quad \checkmark$$

$$f(n) = \log_r^n \quad g(n) = \Lambda n - n^r \quad (\wedge)$$

$$f \circ g \rightarrow \log_r^{\Lambda n - n^r} \Rightarrow 1) f \circ g = \Lambda n - n^r > 0 \Rightarrow \frac{0}{1+1} = 0$$

$$R f \circ g \Rightarrow \log_r^{\Lambda n - n^r} \rightarrow (-\infty, r] \rightarrow B$$

$$n = r \quad \checkmark$$

$$A \cap B \rightarrow 1, r, \varepsilon \rightarrow \text{بعضی}$$

$$\log_r^r = \varepsilon$$

$$f \circ f = 1 - r f(n) \quad g(n) = n - 1 \quad (g)$$

$$h(n) = n^r + r n + 1$$

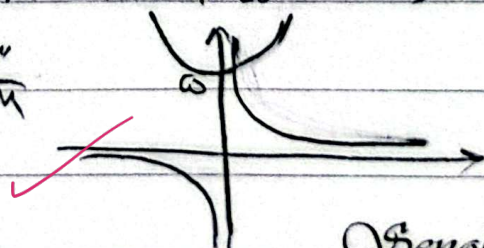
$$h \circ g = f(n)$$

$$f(f(n)) = 1 - r f(n) \rightarrow f(n) = 1 - r n^r$$

$$h(g(n)) = (n-1)^r + r(n-1) + 1 = n^r - r n^r + r n - r + 1 = n^r - r n^r + r n - r$$

$$h(g(n)) = f(n) \rightarrow 1 - r n^r = n^r - r n^r + r n - r \rightarrow n^r + r n = r$$

$$\rightarrow n(n^r + r) = r \rightarrow n^r + r = \frac{r}{n}$$



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$$1 \quad f(n) = n - \frac{\Sigma}{n} \rightarrow n - \frac{\Sigma}{n} = r \Rightarrow n^2 - \Sigma = rn \Rightarrow$$

(1.)

$$2 \quad g \circ f = an^r + rn$$

$$n^2 - rn - \Sigma =$$

$$3 \quad g(r) = 1$$

$$(n-r)(n+1)$$

$$4 \quad \begin{array}{l} n = \Sigma \\ y = 1 \end{array} \rightarrow 46a + 1 = 1 \Rightarrow a = 0$$

$$n = \Sigma - 1$$

$$5 \quad \begin{array}{l} n = -1 \\ y = 1 \end{array} \rightarrow -a - r = 1 \rightarrow -a = 1 \Rightarrow a = -1$$