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$$f(n) = \sqrt{\log_y(n+1)} \quad g(n) = \sqrt{2n^2 + 12n - 15} = \sqrt{-(n-2)^2} \rightarrow \text{báo } n=2 \quad (1)$$

$$g \circ f(n) = g(f(n)) = \sqrt{-(\log_y(n+1) - 2)^2} \Rightarrow -(\log_y(n+1) - 2)^2 \geq 0 \rightarrow (\log_y(n+1) - 2)^2 = 0$$

$n-1 > 0 \Rightarrow n > 1$ $\star n=1 \leftarrow \log_y 2 = 1 \leftarrow \sqrt{\log_y 2} = 1$ (y)

$$D g \circ f(n) = \boxed{1} \quad \checkmark$$

$$f \circ g(n) = 2(n^2 - 12n + 15) - 15 = 2n^2 - 24n + 15 \quad (2)$$

$$g \circ f(n) = (2n^2 - 12n + 15) - 15 = 2n^2 - 12n \Rightarrow 2n^2 - 12n + 15 = 0 \rightarrow 2n^2 - 12n + 15 = 0 \rightarrow \alpha^2 + \beta^2 = \gamma^2 - \gamma^2$$

$$\Rightarrow 2n^2 - 12n + 15 = 2n^2 - 12n + 15 \Rightarrow 2n^2 - 12n + 15 = 0 \rightarrow \alpha^2 + \beta^2 = \gamma^2 - \gamma^2$$

$$S = -\frac{b}{a} = \frac{12}{2} = 6 \quad P = \frac{c}{a} = \frac{15}{2} \Rightarrow \log_y 15 = 6 \quad \checkmark$$

$$g(f(n)) = 2n^2 + 11 \Rightarrow g(2n) = 2n^2 + 11 \xrightarrow{n=\frac{t}{2}} g(t) = \frac{t^2}{2} + 11 \quad \checkmark \quad (3)$$

$$g(n-2) \rightarrow \frac{2(n-2)^2}{2} + 11 = \frac{2n^2 - 8n + 8}{2} + 11 \Rightarrow \min \quad y_S = \frac{-b}{2a} = \frac{4}{2} = 2$$

$$y_S = 2 \times 2^2 - 8 \times 2 + 8 = 0 \quad \checkmark \quad (11) = \frac{4}{2} = 2$$

$$f \circ g(n) = f(g(n)) = 2(g(n)) - 15 = 2n^2 - 24n + 15 \xrightarrow{+15} 2n^2 - 24n + 30 \quad (4)$$

$$g \circ f(n) \rightarrow (2n^2 - 12n + 15) - 15 = 2n^2 - 12n \quad g(n) = 2n^2 - 12n + 15 \div 2$$

$$2n^2 + 15 - 12n - 12n + 15 = \boxed{2n^2 - 24n + 30} \quad \checkmark \quad (5)$$

$$f - g = -n + 15 \xrightarrow{x^2} 2f(n) - 2g(n) = -2n + 30 - (2f(n) - 2g(n) = 15) \Rightarrow g(n) = 2n - 1 \quad (6)$$

$$2f(n) - 2g(n) = 15$$

$$f(g(n)) = 2(2n - 1) + 15 = 4n + 13$$

$$f \circ g(n) = \frac{4}{2}n + 13$$

$$\frac{4}{2} = 2 \Rightarrow \boxed{2} = \frac{1}{2}$$

nuzzle

$$\left. \begin{aligned} f(n) &= q^n \\ g(n) &= \log_q n \end{aligned} \right\} \begin{aligned} f \circ g(n) &= f(g(n)) = q^{\log_q n} = n \\ g \circ f(n) &= g(f(n)) = \log_q q^n = n \end{aligned} \quad \left. \begin{aligned} f \circ g(n) &= f(g(n)) = q^{\log_q n} = n \\ g \circ f(n) &= g(f(n)) = \log_q q^n = n \end{aligned} \right\} \begin{aligned} n &> n^2 \\ n &> n^2 \end{aligned} \quad (4)$$

$$[29-2] \quad \frac{0}{-b+b} \quad n(1-n) > 0 \quad \leftarrow \quad n - n^2 > 0 \quad (5)$$

$$f\left(\frac{n^2-1}{n}\right) = n^2 - 1 + \frac{1}{n^2} + n - \frac{1}{n} \Rightarrow f(t) = t^2 + t \Rightarrow \boxed{f(n) = n^2 + n} \quad (6)$$

$$\left. \begin{aligned} f(n) &= \log_q n \\ g(n) &= \log_q (1-n^2) \end{aligned} \right\} \begin{aligned} f \circ g(n) &= f(g(n)) = \log_q (1-n^2) \\ g \circ f(n) &= g(f(n)) = \log_q (1-n^2) \end{aligned} \quad \leftarrow \quad n(1-n) > 0 \quad (7)$$

$$A = (29A) = D_{f \circ g} \quad \frac{0}{-1+1} \quad \leftarrow \quad n(1-n) > 0 \quad (8)$$

$$n_0 = \frac{-b}{2a} = \frac{-1}{-2} = \frac{1}{2} \quad y_0 = 1 - \frac{1}{4} = \frac{3}{4} \quad \log_q \frac{1}{2} = \frac{1}{2} \quad \Rightarrow \quad R_{f \circ g} = (-\infty, \frac{1}{2}] = B$$

$$A \cap B \Rightarrow (0, \frac{1}{2}] \quad \checkmark \quad \log_q \frac{1}{2} = \frac{1}{2} \quad \Rightarrow \quad \boxed{\frac{1}{2}} \quad (9)$$

$$h(n) = n^2 + 2n + 1 \quad (g(n) = n-1) \quad f(f(n)) = 1 - 2f(n) \rightarrow f(n) = 1 - 2n^2 \quad (10)$$

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

$$\Rightarrow n^2 - 2n + 1 + 2n - 2 + 1 = 1 - 2n^2 \Rightarrow n^2 - 2n + 1 = 1 - 2n^2 \Rightarrow 3n^2 - 2n = 0 \Rightarrow n(3n-2) = 0 \Rightarrow n = 0 \text{ or } n = \frac{2}{3} \quad \Rightarrow \quad \boxed{\frac{2}{3}} \quad (12)$$

$$g \circ f(n) = g\left(n - \frac{1}{n}\right) = a n^2 + 2n \quad (13)$$

$$g(3) = 1 \Rightarrow n - \frac{1}{n} = 3 \Rightarrow n^2 - 3n - 1 = 0 \Rightarrow n = \frac{3 \pm \sqrt{13}}{2} \quad (14)$$

$$n = 3 \Rightarrow g\left(3 - \frac{1}{3}\right) = a \left(3 - \frac{1}{3}\right)^2 + 2 \cdot 3 = 1 \Rightarrow a = 0 \quad (15)$$

$$n = -1 \Rightarrow g\left(-1 - \frac{1}{-1}\right) = -a - 1 \Rightarrow 1 = -a - 1 \Rightarrow a = -2 \quad (16)$$