

سریار

$$Dg \circ f = \{x \in Df \mid f(x) \in Dg\} \quad f(x) = \sqrt{\log_r(x-1)} \quad x > 1$$

$$x-1 \geq 1 \quad x \geq 2 \quad g(x) = \sqrt{(x-1)^2} \quad Dg = \{x\} \quad \log_r(x-1) \geq 0$$

$$\sqrt{\log_r(x-1)} = 2 \quad \log_r(x-1) = 4 \quad x = 17$$

$$f \circ g(x) = (x^2 - 3x + 1) - \omega = x^2 - 4x + 11$$

$$g \circ f(x) = (x^2 - \omega)^2 - 3(x - \omega) + 1 = x^4 - 2\omega x^2 + \omega^2 - 3x + 3\omega + 1$$

$$x^4 - 4x + 11 = x^4 - 2\omega x^2 + \omega^2 - 3x + 3\omega + 1 \quad x^4 - 2\omega x^2 + 3\omega = 0$$

$$x^2 + \beta^2 = (x + \beta)^2 \quad x^2 + \beta^2 = \frac{x + \beta}{\alpha} \quad \alpha + \beta = 10 \quad \alpha\beta = 4 \quad \alpha = 2 \quad \beta = 8$$

$$g(x) = \frac{\omega}{x} x^2 + 11 \quad g(x-1) = \frac{\omega}{x-1} x^2 + \frac{\omega}{x-1} x + \frac{11\omega}{x-1}$$

$$x^2 - 1 = -1 \quad x^2 = 0 \quad x = 0$$

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

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

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



$$p(x) = (x)$$

$$\times p \begin{cases} f(x) - g(x) = -x+1 \\ pg(x) - pf(x) = -1 \end{cases} \begin{cases} pf(x) - pg(x) = -x+1 \\ pg(x) - pf(x) = -1 \end{cases}$$

$$-f(x) = -x-1 \quad f(x) = x+1 \quad g(x) = x-1$$

$$fog = p(pf(x)-1) + 1 = 4x+1 \quad fog(x) = y = \frac{p}{a}x-1$$

$$\frac{p}{a}x-1 = 4x+1 \rightarrow \frac{p}{a}x+1 = 4x+1 \rightarrow \frac{p}{a} = 4 \rightarrow a = \frac{1}{4}$$

$$fog(x) = 9 \log^2 x = x^{\log 9} = 2^x \quad gof(x) = \log^2 9^x = 2x$$

$$x^2 \leq 2x$$

$$x^2 - 2x \leq 0 \quad x > 0$$

$$\frac{0}{+} - \frac{2}{-} +$$

$$I \cap II = (0, 2] \quad \log(x) \leq 2 \Rightarrow x \leq 10^2$$

$$\frac{2^x - 1}{2} = 2 - \frac{1}{2} \quad (2 - \frac{1}{2})^2 = 2^x - 1 + \frac{1}{4}$$

$$\frac{f(2 - \frac{1}{2})}{t} = \frac{2^x - 1 + \frac{1}{4}}{2^x} + \frac{2 - \frac{1}{2}}{t} \quad f(x) = 2^x + 2$$



$$Df \circ g = \{2 \leq Dg | g(2) \in Df\} \quad Dg = IR \quad Rg = (-\infty, 1/4]$$

-1

$$Df = (0, \infty) \quad 1/2 - 2^x > 0 \quad 2^x - 1/2 < 0 \quad \frac{0}{+} \frac{1}{-} \frac{1}{+}$$

$$A = Df \circ g = (0, 1) \quad Rg = Df \xrightarrow{Rg \in (-\infty, 1/4]} \quad B = Rf_{g^x} = (-\infty, 9^x]$$

$$A \cap B = (0, 1) \quad \text{par} \quad \{1, 2, 3, 4\}$$

