

سری

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

$$\log_r(x-1) \geq 0$$

(۲)

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

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

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

-۲

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

(۲)

$$x^4 - 4x + 11 = x^4 - 2\omega x^2 + \omega^2 - 3x + 3\omega + 1 \quad x^4 - 2\omega x^2 + 3\omega x + 10 = 0$$

$$x^2 + \beta^2 = (\alpha + \beta)^2 \quad \alpha\beta = \frac{\alpha + \beta}{2} > 100 \quad -3\omega = 4\omega \quad \alpha\beta = \frac{3\omega}{2} \quad \checkmark$$

$$g(x) = \frac{\omega}{x} x^2 + 11 \quad g(x-1) = \frac{\omega}{x} x^2 + \frac{3\omega}{x} x + \frac{11\omega}{x}$$

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$$\text{طول} = -1 \quad \text{عرض} = 11 \quad \checkmark$$

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

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

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



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

-A

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

(P)

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

$$fog = f(g(x)) = f(x-1) = (x-1)+1 = x \quad fog(x) = x = \frac{1}{a}x-1$$

$$\frac{1}{a}x - 1 = x \Rightarrow \frac{1}{a}x - x = 1 \Rightarrow \frac{1-a}{a}x = 1 \Rightarrow \frac{1-a}{a} = 1 \Rightarrow 1-a = a \Rightarrow a = \frac{1}{2}$$

-A

$$fog(x) = 9^{\log_9 x} = x^{\log_9 9} = x \quad gof(x) = \log_9 9^x = x$$

-4

$$x^2 \leq 2x$$

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

$$\begin{matrix} 0 & 2 \\ + & - & + \end{matrix}$$

(P)

$$I \cap II = (0, 2]$$

$$\log_9(x) = 2 \Rightarrow x = 9^2 = 81$$

-10

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

-V

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

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$$Df \circ g = \{x \in Dg \mid g(x) \in Df\} \quad Dg = \mathbb{R} \quad Rg = (-\infty, 1/4]$$

$$Df = (0, \infty) \quad 1/4 - x^2 > 0 \quad x^2 - 1/4 < 0 \quad \frac{0}{+} \frac{1}{-} \frac{1}{+}$$

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

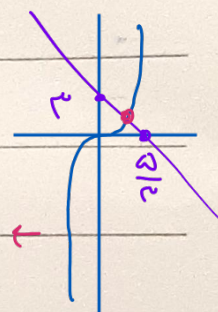
$$A \cap B = (0, 9/4) \quad \text{parabola} \quad \left\{ \begin{matrix} 1, 9/4, 9/4 \end{matrix} \right\}$$

$$f \circ f(n) = 1 - c f(n) \rightarrow f(n) = 1 - c n^2$$

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

$$1 - c n^2 = n^2 - c n^2 + 2n - 2 \rightarrow n^2 = -2n + c$$

دائرة



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

$$n = \Sigma \rightarrow 4\Sigma a + 1 = 1 \rightarrow a < 0$$

$$n = -1 \rightarrow -a - 2 = 1 \rightarrow a < -1$$

