

۱۹/۵ آزمین

$$gof(x) = \sqrt{-(\sqrt{\log_r(x+1)})^2 + 4\sqrt{\log_r(x+1)} - 2} = \sqrt{-(\sqrt{\log_r(x+1)} - 2)^2}$$

$$x \rightarrow x > 1$$

$$\log_r x - 1 \geq 0 \rightarrow x - 1 \geq 1 \rightarrow x \geq 2$$

$$\sqrt{\log_r x} = 1 \rightarrow \therefore \log_r x = 1 \rightarrow x = r \rightarrow \boxed{x = 14 \rightarrow x = 17}$$

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$$f(x) = 2x^2 - 4x + 14 - \Delta = 2x^2 - 4x + 11$$

$$gof(x) = (2x - \Delta)^2 - 2(2x - \Delta) + 11 = 4x^2 + 2\Delta - 2x - 4x + 1\Delta + 11 = 4x^2 - 2\Delta x + 11$$

$$f(x) = gof(x) \rightarrow 2x^2 - 4x + 11 = 4x^2 - 2\Delta x + 11 \Rightarrow 2x^2 - 2\Delta x + 2\Delta x - 4x = 0 \Rightarrow 2x^2 - 2x + 2\Delta = 0 \rightarrow \boxed{Q, B}$$

$$Q, B: 5^2 - 2 \cdot 5 + 2\Delta = 0 \rightarrow 100 - 2\Delta = 0 \rightarrow \boxed{\Delta = 50}$$

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$$gof(x) = 4x^2 + 11 \rightarrow g(2x) = 4(2x)^2 + 11$$

$$f(x) = 2x$$

$$g(2x) = 4(2x)^2 + 11 \xrightarrow{x = \frac{t}{2} \rightarrow t = 2x} g(t) = 4\left(\frac{t}{2}\right)^2 + 11 \rightarrow g(t) = \frac{1}{4}t^2 + 11$$

$$t = 6(x - 1) \rightarrow g(x - 1) = \frac{1}{4}(6(x - 1))^2 + 11 \rightarrow x = 1 \rightarrow \boxed{g(x - 1) = 11}$$

تقریباً مقدار تابع

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$$f(x) = 2x - 1$$

$$g(x) = x^2 - 2x + 1 = (x - 1)^2$$

$$f(x) = 2x - 1$$

$$gof(x) = (2x - 1)^2 = (2x - 1)^2 = \boxed{4x^2 - 4x + 1}$$

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$$2g(x) = 2f(x) - 1$$

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

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

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

$$f(x) = 2(\frac{1}{2}f(x) - \frac{1}{2}) - 1 = f(x) - 1 - 1 = f(x) - 2 \rightarrow f(x) = 2 \rightarrow 0 = 2a + 1 \rightarrow a = -\frac{1}{2}$$

$$\boxed{a = -\frac{1}{2}}$$

✓

$$f(x) \cdot q^n$$

$$g(x), \log_r x \rightarrow x > 0 \rightarrow \mathbb{R}$$

$$\log(x) \cdot q^{(\log_r x)} x^r$$

$$g \circ f(x) \cdot \log_r x \cdot r x$$

$$\log(x) \leq g \circ f(x) \rightarrow x^r \leq r x \rightarrow x^{r-1} \leq r \rightarrow \frac{1}{0} - \frac{1}{r} \rightarrow$$

$$\boxed{0 \leq x \leq r}$$

$$\textcircled{1} \text{ با توجه به این که } x > 0, r \rightarrow \boxed{1, 2} \rightarrow \dots$$

$$f\left(\frac{x^r}{x}\right) = x^r + x - \frac{r}{x} \cdot \frac{r}{x} \rightarrow f\left(\frac{x^r}{x}\right) = x^r + \frac{r}{x^r} - \frac{r}{x}$$

$$f\left(x - \frac{r}{x}\right) = x^r + \frac{r}{x^r} - \frac{r}{x} + x - \frac{r}{x} \rightarrow f\left(x - \frac{r}{x}\right) = \left(x - \frac{r}{x}\right)^r + x - \frac{r}{x} \xrightarrow{(x - \frac{r}{x})^r} f(t), t + t$$

$$\boxed{f(x) \cdot x^r + x}$$

$$f(x) = \log_r x$$

$$g(x) = \ln x - x^r$$

$$\log(x) \cdot \log_r^{1/x-x^r} \rightarrow \ln x - x^r > 0 \rightarrow \frac{1}{0} + \frac{1}{1} \rightarrow 0 < x < 1$$

$$\boxed{D_{\log} = (0, 1) \rightarrow A}$$

$$A \cap B = (0, 1]$$

$$x \in \mathbb{R} \in 1, 2, 3, f$$

$$R_{\log} \rightarrow \ln x - x^r \rightarrow -\frac{b}{r a} \cdot \frac{1}{r a} \rightarrow$$

$$\max(\ln x - x^r) = 14$$

$$\min(\ln x - x^r) = 0 \rightarrow 0 < x < 1$$

$$\log_r^{(1/x-x^r)}$$

$$\boxed{R_{\log} = (-\infty, 1] \rightarrow B}$$

$$f \circ f(x) = 1 - f^r(x) \rightarrow f(f(x)) = 1 - f^r(x) \rightarrow f(y) = 1 - f^r \rightarrow \boxed{f(x) = 1 - f^r}$$

$$g(x) = x - 1$$

$$x^r = -8x + 3$$

$$h(x) = x^r + rx + 1$$

$$h(g(x)) = (x-1)^r + r(x-1) + 1 = x^r - r x^{r-1} + r x - r + 1 = x^r - r x^{r-1} + r x - r$$

$$h(g(x)) = f(x) \rightarrow x^r - r x^{r-1} + r x - r = 1 - f^r \rightarrow \boxed{x^r + r x - r = 1}$$

$$\text{یک ریشه دارد}$$

$$f(x) = x - \frac{r}{x}$$

$$g \circ f(x) = a x^r + r x$$

$$g\left(x - \frac{r}{x}\right) = a x^r + r x$$

$$x - \frac{r}{x} = r \rightarrow x^2 - r = r x \rightarrow x^2 - r x - r = 0 \rightarrow (x-r)(x+1) = 0 \rightarrow x = r \rightarrow -1$$

$$x = r \rightarrow g(r) = 4r + 1 = 1 \rightarrow \boxed{a = 0} \quad a = -1 \rightarrow g(r) = -a - r \cdot 1 \rightarrow \boxed{a = -1}$$